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# IEEE-NANO 2004

**2004 Fourth IEEE Conference on  
Nanotechnology**

**17– 19 August 2004**

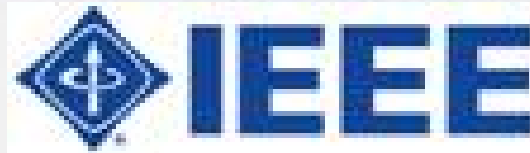
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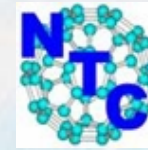
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# IEEE-NANO 2004

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Conference Details (web link)

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Links: IEEE  
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# IEEE-NANO 2004

## A message from the General Chair and the Program Chair

On behalf of the organizers, we would like to welcome you to the 2004 Fourth IEEE Conference on Nanotechnology. After successful conferences in Maui, Washington DC and most recently San Francisco, the IEEE Nano Conference has left the United States for the first time this year and arrived in the Old Continent.

It is a great pleasure to welcome you to Munich, a very attractive and dynamic city which, in addition to its profound cultural heritage, is the present day high-tech capital of Germany. It is therefore of great significance for the City, and especially for the Technical University, to host such prestigious event dedicated to a theme with so much impact on future high technology growth.. The conference is sponsored by the IEEE Nanotechnology Council, and has received generous financial support from several companies and government agencies. The purpose of the conference is to provide a forum for the discussion and exchange of ideas in various areas of nanoscience and nanotechnology, with the main focus on the engineering aspects of nanotechnology, from nanostructure modeling and fabrication to nanosystems design and realization.

The program of IEEE-Nano 2004 consists of 5 plenary talks, 15 invited presentations, approximately 110 contributed oral presentations and 90 contributed posters (distributed in 2 poster sessions). The Proceedings in this CD-ROM contain all the contributed papers (oral and posters), and the Proceedings Chairpersons and their collaborators are to be praised for such an outstanding achievement. In addition to the invited and contributed presentations, four tutorial short courses are offered on the first day. An exhibition is organized throughout the conference as well. A special panel session on the critical subject of how to teach nanotechnology is organized on Wednesday. A special symposium will take place on Thursday afternoon, dedicated to the applications of Nanotechnology in Medicine. We would like to thank all the members of the Program Committee for their work and effort in putting together a very interesting and high quality program.



# IEEE-NANO 2004

We hope that, in addition to the scientific exchange, you will also enjoy the social program, which is as full and attractive as the scientific one. We will start on Monday evening with a welcoming reception hosted by the Bavarian Ministry for Economic Affairs, Infrastructure, Transport and Technology in the fabulous “Residenz” palace Tuesday will feature a classical music concert, and on Wednesday, there will be a conference buffet dinner featuring traditional Bavarian offerings at the Löwenbraukeller, another historical institution of Munich. During both poster sessions, food and wine tasting (this time Italian) will be offered. Finally, on Thursday, a special award lunch will be held, where the best paper of the conference will be awarded. We would like to thank all members of the Organizing Committee and all the staff that have been involved with the preparation of the Conference, and who will be available assist the attendees during the course of the conference.

We thank you all for coming to Munich, and wish you a very interesting, stimulating, and enjoyable time at IEEE NANO 2004.

Paolo Lugli, General Chair

Stephen M. Goodnick, Program Chair

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# IEEE-NANO 2004

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## **TUESDAY ORAL SESSIONS:**

TU\_PL: PLENARY SESSION  
TU\_1\_1: CARBON NANOTUBES 1  
TU\_1\_2: NANOMATERIALS  
TU\_1\_3: NANOROBOTICS  
TU\_2\_1: NANOELECTRONICS 1  
TU\_2\_2: NANOFABRICATION 1  
TU\_2\_3: NANOPHOTONICS 1  
TU\_3\_1: NANOELECTRONICS 2  
TU\_3\_2: NANOSTRUCTURES 1  
TU\_3\_3: TEACHING NANOTECHNOLOGY

## **WEDNESDAY ORAL SESSIONS:**

WE\_PL: PLENARY SESSION  
WE\_1\_1: MOLECULAR ELECTRONICS  
WE\_1\_2: SPINTRONICS  
WE\_1\_3: NANOSENSORS  
WE\_2\_1: NANOCIRCUITS  
WE\_2\_2: NANOSTRUCTURES 2  
WE\_2\_3: NANOFABRICATION 2  
WE\_3\_1: NANOPHOTONICS 2  
WE\_3\_2: NANOELECTRONICS 3

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WE\_3\_3: NANOBIOELECTRONICS

**THURSDAY ORAL SESSIONS:**

TH\_1\_1: NANOMECHANICS

TH\_1\_2: "DURINT" PROJECT - NANOELECTRONICS

TH\_1\_3: NANOFABRICATION 3

TH\_2\_1: NANOBIOELECTRONICS 2

TH\_2\_2: "DURINT" PROJECT - NANOCIRCUITS

TH\_2\_3: NANOELECTRONICS 4

TH\_3\_1: (Late news papers)

TH\_3\_2: NANOMANIPULATION

TH\_SP: SYMPOSIUM ON "Applications of Nanotechnology in Medicine"

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**MONDAY AUG. 16th**

**9.00-12.30 Tutorial short course I : Carbon Nanotubes (M. Meyyapan, NASA)**

**9.00-12.30 Tutorial short course II : Nanoelectronics (S.M. Goodnick, ASU)**

**14.00-17.30 Tutorial short course III : Molecular Electronics (P. Lugli, TUM; A. Di Carlo, Rome "Tor Vergata")**

**14.00-17.30 Tutorial short course IV : Bioelectronics (B. Wolf and coworkers, TUM)**

**19.00 Welcoming Reception at "Residenz"**

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**TUESDAY AUG. 17th**

**8.45 Opening**

**9.00-11.00 TU\_PL: PLENARY SESSION**  
(Chair: S. M. Goodnick)

**9.00 TU\_PL\_1 Plenary lecture: Nanoelectronic a quantum leap**

Klaus von Klitzing (*Max-Planck-Institut FKF, Stuttgart, Germany*)

**10.00 TU\_PL\_2 Plenary lecture: Benchmarking Nanotechnology for High-Performance and Low-Power Logic Transistor Applications**

Robert Chau, (*Intel Corporation, Portland, OR, USA*)

**11.00 Coffee break**

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**11.30-12.45 SESSION TU1\_1: CARBON NANOTUBES 1**  
**(Chair: G. Abstreiter)**

**TU1\_1\_1 Invited talk: Carbon nanotube electronics and opto-electronics**

Phaedon Avouris (*IBM Research Division, T.J. Watson Research Center, Yorktown Heights, USA*)

**TU1\_1\_2 Carbon Nanotube Based High Current Transistors,**  
R. Seidel, A.P. Graham, E. Unger, G.S. Duesberg, M. Liebau, W. Steinhoegl, W. Pamler, and F. Kreupl, (*Infineon Technologies AG, Corporate Research, 81730 Munich, Germany*)

**TU1\_1\_3 Simulation of Carbon Nanotube Field-Effect Devices,**  
L. Latessa<sup>1</sup>, A. Pecchia<sup>1</sup>, A. Di Carlo<sup>1</sup>, G. Scarpa<sup>2</sup>, and P. Lugli<sup>2</sup>, (<sup>1</sup>*Dept. of Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy,* <sup>2</sup>*Dept. of Electrical Engineering, Technical University of Munich, Munich, Germany*)

**TU1\_1\_4 Deposition and STM Investigation of Single-Walled Carbon Nanotubes on GaAs(110),**  
L.B. Ruppalt, P.M. Albrecht, and J.W. Lyding, (*Beckman Institute and Dept. of Electrical and Computer Engineering, University of Illinois, Urbana, Champaign 61801, USA*)

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## 11.30-12.45 SESSION TU1\_2: NANOMATERIALS (Chair: U. Ravaoli)

### TU1\_2\_1 Two-color Size-Tunable (1100-1600 nm) Quantum Dot Nanocrystal Electroluminescent Devices,

L. Bakueva, G. Konstantatos, L. Levina, E.H. Sargent, (Dept. of Electrical & Computer Engineering, University of Toronto, Toronto M5S 3G4, Canada)

### TU1\_2\_2 Thermal Conductivity of Si/Ge Quantum Dot Superlattices,

A. Khitun<sup>1</sup> J. Liu<sup>2</sup> and K.L. Wang<sup>1</sup>, (<sup>1</sup>Device Research Laboratory, Electrical Engineering Dept., MARCO Focus Center on Functional Engineered Nano Architectonics (FENA), University of California at Los Angeles, Los Angeles, California, 90095-1594, USA, <sup>2</sup>Dept. of Electrical Engineering, University of California at Riverside, Riverside, CA 92521, USA)

### TU1\_2\_3 Characterization Approaches of Nanoscale Modified Plastics,

D. Vogel<sup>1</sup>, J. Keller<sup>1</sup>, B. Michel<sup>1</sup>, M. Holst<sup>2</sup>, M. Muzic<sup>2</sup>, (<sup>1</sup>Fraunhofer IZM, Micro Materials Center Berlin, Berlin, Gustav-Meyer-Allee 25, D-13355 Berlin, Germany, <sup>2</sup>Robert Bosch GmbH, P.O.B. 11 31, D-71301 Waiblingen, Germany)

### TU1\_2\_4 Highly Thermal Robust Ni-Germanosilicide Utilizing NiPt/Co/TiN Tri-layer for CMOS Application,

J.-G. Yun<sup>1</sup>, S.-Y. Oh<sup>1</sup>, H.-H. Ji<sup>1</sup>, B.-F. Huang<sup>1</sup>, S.-H. Park<sup>2</sup>, H.-S. Lee<sup>2</sup>, D.-B. Kim<sup>2</sup>, U.-S. Kim<sup>2</sup>, H.-S. Cha<sup>2</sup>, S.-B. Hu<sup>2</sup>, J.-G. Lee<sup>2</sup>, and H.-D. Lee<sup>1</sup>, (<sup>1</sup>Dept. of Electronics Engineering, Chungnam National University, Yuseong-gu, Daejeon 305-764, Korea, <sup>2</sup>System IC R&D Division, Hynix Semiconductor Inc., Hungduk-Gu, Chongju 361-725, Korea)

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## TU1\_2\_5 Nanoscale Materials Modification Via Low-Energy Reactive Plasmas,

P.A. Kraus, T.C. Chua, C.S. Olsen, T.M. Bauer\*, *(Front End Products Group, Applied Materials, Sunnyvale, CA, USA, \*Sandia National Laboratories, Albuquerque, NM, USA)*

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## 11.30-12.45 SESSION TU1\_3: NANOROBOTICS (Chair: T. Fukuda\*)

TU1\_3\_1 Carbon Nanotube-Tipped Microcantilever Arrays for Imaging, Testing, and 3D Nanomanipulation: Design and Control,  
E. Lee, and M.J. Chung, *(Korea Advanced Institute of Science and Technology, Daejeon, 305-701, South Korea)*

TU1\_3\_2 Dynamic Modes of Nano-Particle Motion During Nanoprobe Based Manipulation,  
A. Tafazzoli and M. Sitti, *(Dept. of Mechanical Eng., Carnegie Mellon University, Pittsburgh, PA 15213, USA)*

TU1\_3\_3 Nonlinear Dynamics of a Micro-Cantilever in Close Proximity to a Surface,  
F. Jamitzky<sup>1,2</sup>, M. Stark<sup>3,4</sup>, W. Bunk<sup>2</sup>, W.M. Heckl<sup>1</sup>, R.W. Stark<sup>1</sup>,  
*(<sup>1</sup>Center for Nanoscience and Ludwig-Maximilians-Universität, 80333 Munich, Germany, <sup>2</sup>Center for Interdisciplinary Plasma Science and Max-Planck-Institut für Extraterrestrische Physik, 85748 Garching, Germany, <sup>3</sup>Laboratoire Spectrométrie Physique, UJF/CNRS, 38402 St Martin d'Hères, France, <sup>4</sup>LEPES (CNRS), 38042 Grenoble, France)*

TU1\_3\_4 Invited talk: Perspective of Nanotube Sensors and Nanotube Actuators  
Toshio Fukuda, Fumihito Arai, Lixin Dong, and Yoshiaki Imaizumi  
*(Department of Micro/Nano System Engineering, Nagoya University, Nagoya, Japan)*

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**14.30-16.00 SESSION TU2\_1: NANOELECTRONICS 1**  
**(Chair: G. Klimeck\*)**

**TU2\_1\_1 Invited talk: Quantum devices in semiconductor nanowires**

Lars Samuelson (*Lund University, Solid State Physics/the Nanometer Structure Consortium LUND, Sweden*)

**TU2\_1\_2 STTM - Promising Nanoelectronic DRAM Device,**

S.J. Baik, Z. Huo, S.-H. Lim, I.-S. Yeo, S. Choi, U.-I. Chung, and J. T. Moon, (*Process Development Team, Semiconductor R&D Center, Samsung Electronics Co., LTD. San#24 Nongseo-Ri, Giheung-Eup, Yongin-City, Gyeonggi-Do, Korea 449-711*)

**TU2\_1\_3 Fabrication of Single-Electron Transistors Based on Proximity Effects of Electron-Beam Lithography,**

S.-F. Hu<sup>1</sup>, Y.-P. Fang<sup>2</sup>, Y.-C. Chou<sup>2</sup> and G.-J. Hwang<sup>3</sup>, (*<sup>1</sup>National Nano Device Laboratories, Hsinchu 30050, Taiwan, R.O.C., <sup>2</sup>Dept. of Physics, National Tsing Hua University, Hsinchu 30043, Taiwan, R.O.C., <sup>3</sup>Center of Measurement Standards, Industrial Technology Research Institute, Hsinchu 30042, R.O.C.*)

**TU2\_1\_4 Defect Characterization and Yield Analysis of Array-Based Nanoarchitecture,**

S. Zhang<sup>1</sup>, M. Choi<sup>1</sup>, and N. Park<sup>2</sup>, (*<sup>1</sup> Dept. of ECE, University of Missouri-Rolla, Rolla, MO 65409-0040, USA, <sup>2</sup> Dept. of CS, Oklahoma State University, Stillwater, OK 74078, USA*)

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TU2\_1\_5 Triple High  $\kappa$  Stacks ( $\text{Al}_2\text{O}_3/\text{HfO}_2/\text{Al}_2\text{O}_3$ ) with High Pressure  
10atm)  $\text{H}_2$  and  $\text{D}_2$  Annealing for SONOS Type Flash Memory Device  
Applications,

S. Jeon, S. Choi\*, H. Park\*, H. Hwang\*, J.H. Han, H. Chae, S.D.  
Chae, J.H. Kim, M.K. Kim, Y.S. Jeong, Y. Park, S. Seo, J.W. Lee, and  
C.W. Kim, *(M.D. lab, Samsung Advanced Institute of Technology, San 14 Nongseo-ri, Kihung-up,  
Yongin-si, Kyungki-do, Korea, Dept. of Materials Science & Engineering, Kwangju Institute of Science &  
Technology, Gwangju, 500-712, Korea)*

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## 14.30-16.00 SESSION TU2\_2: NANOFABRICATION 1 (Chair: R.J. Pryputniewicz)

### TU2\_2\_1 Design and Simulation of Magnetically Controlled Nanoscale Assembly,

G. Friedman, B. Yellen and I. Tsukerman\*, *(Drexel University, Electrical and Computer Engineering Dept., Philadelphia, PA 19104, USA, \*Dept. of Electrical & Computer Engineering, The University of Akron, OH 44325, USA)*

### TU2\_2\_2 Dip Pen Nanolithography™ and its Potential for Nanoelectronics,

B. Rosner, N. Amro, S. Disawal, L. Demers, H. Zhang, J. Rendlen, T. Duenas, R. Shile, J. Fragala, R. Elghanian, *(NanoInk Inc., Chicago, IL 60607, USA; NanoInk Inc., Campbell, CA 95008, USA)*

### TU2\_2\_3 Fabrication of Embedded Media by Etching of Self-Assembled Mask,

L.K. Verma and V. Ng, *(Information Storage Materials Laboratory, Dept. of Electrical and Computer Engineering, National University of Singapore, 4 Engineering Drive 3, Singapore 117576)*

### TU2\_2\_4 Fabrication of Magnetic Nanostructures Using KrF Lithography,

N. Singh<sup>1,2</sup>, Goolaup S.<sup>2</sup> and A.O. Adeyeye<sup>2</sup>, *(<sup>1</sup>Institute of Microelectronics, 11 Science Park Road, Singapore Science Park II, Singapore -117685, <sup>2</sup>Dept. of Electrical and Computer Engineering, National University of Singapore, 4 Engineering drive 3, Singapore-117576)*

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TU2\_2\_5 Scanning Tunneling Microscopy Using Dynamic Laser Heating,

J. Ballard, D. Shi, E. Carmichael, S. Pappu, J. Lyding, and M.

Gruebele, *(Beckman Institute of Advanced Science and Technology, University of Illinois, Urbana, IL, 61801, USA)*

TU2\_2\_6 Self-Assembled Monolayer Resists for Electron Beam Lithography,

S.O. Koswatta, A.D. Scott, S. Bhattacharya, and D.B. Janes, *(Dept. of Electrical and Computer Engineering, Purdue University, West Lafayette, IN 47906, USA)*

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## 14.30-16.00 SESSION TU2\_3: NANOPHOTONICS 1 (Chair: Y. Arakawa\*)

TU2\_3\_1 A Basic Architecture for a Multistate Memory System  
Using Nano Antennas,

Lakshmanan.V.H, Gayathri.S, *(Velammal Engineering College, Chennai-600082, Tamil Nadu, India)*

TU2\_3\_2 Comparing the Transmission Through Ellipse and Double-Hole Nano-Photonic Arrays in Gold Films,

R. Gordon<sup>1</sup>, B. Leathem<sup>2</sup>, P.D. Popescu<sup>1</sup>, K.L. Kavanagh<sup>2</sup> and A.G. Brolo<sup>3</sup>, *(<sup>1</sup>Dept. of Electrical and Computer Engineering, University of Victoria, <sup>2</sup>Dept. of Physics, Simon Fraser University, <sup>3</sup>Dept. of Chemistry, University of Victoria)*

TU2\_3\_3 Light Emission at 1530 nm from Mixture of Er<sub>2</sub>O<sub>3</sub> and P<sub>2</sub>O<sub>5</sub> Nanoparticles on Silicon,

K.-J. Sun, Y.-S. Su, C.-F. Lin\*, *(Graduate Institute of Electro-Optical Engineering, National Taiwan University, No.1, Sec. 4, Roosevelt Road, Taipei, 106, Taiwan, R.O.C, \*also with Graduate Institute of Electronics Engineering, and Dept. of Electrical Engineering)*

TU2\_3\_4 Quantum Confinement Observed in Ultrafine ZnO and ZnO/Zn<sub>0.8</sub>Mg<sub>0.2</sub>O Coaxial Nanorod Heterostructures,

W.I. Park<sup>1</sup>, S.J. An<sup>1</sup>, G.-C. Yi<sup>1</sup>, and M. Kim<sup>2</sup>, *(<sup>1</sup>Dept. of Materials Science and Engineering, Pohang University of Science and Technology, (POSTECH), Pohang 790-784, Korea, <sup>2</sup>Samsung Advanced Institute of Science and Technology, P. O. Box 111, Suwon 440-600, Korea)*

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TU2\_3\_5 Invited talk: Photonic switching in InAs/InP quantum dots

J.E.M. Haverkort, R. Prasanth, S. Dilna, E.W. Bogaart, J.J.G.M. van der Tol, E.A. Patent, G. Zhao, Q. Gong, P.J. van Veldhoven, R.

Nötzel and J.H. Wolter, (*COBRA Inter-University Research Institute, Eindhoven University of Technology, Physics Dept., Eindhoven, The Netherlands*)

16.00-16.30 Coffee break

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## 16.30-18.00 SESSION TU3\_1: NANOELECTRONICS 2 (Chair: D. K. Ferry)

### TU3\_1\_1 Invited talk: Coherent Transport in SWCNTs with Spin-Orbit Coupling

Ahmet Ali Yanik, Prabhakar Srivastava, Gerhard Klimeck and  
Supriyo Datta (*Purdue University, Purdue, IN, USA*)

### TU3\_1\_2 Ballistic Transport in Strained-Si Cavities: Experiment and Theory,

G. Scappucci<sup>1</sup>, L. Di Gaspare<sup>1</sup>, A. Notargiacomo<sup>1</sup>, F. Evangelisti<sup>1</sup>, E. Giovine<sup>2</sup>, R. Leoni<sup>2</sup>, V. Piazza<sup>3</sup>, P. Pingue<sup>3</sup>, F. Beltram<sup>3</sup>, M. Pala<sup>4</sup>, G. Curatola<sup>4</sup>, and G. Iannaccone<sup>4,5</sup>, (*<sup>1</sup>Unità INFM, Dipartimento di Fisica "E. Amaldi", Università di Roma TRE, V. Vasca Navale 84, 00146 Roma, Italy, <sup>2</sup>Istituto di Fotonica e Nanotecnologie, IFN-CNR, V. Cineto Romano 42, 00156, Roma, Italy, <sup>3</sup>NEST-INFM and Scuola Normale Superiore, Via della Faggiola 19, I-56126 Pisa, Italy, <sup>4</sup>Dipartimento di Ingegneria dell'Informazione, Università degli Studi di Pisa and <sup>5</sup>IEIIT-CNR, V. Caruso, 56122 Pisa, Italy*)

### TU3\_1\_3 Very High Performance 50 nm T-gate III-V HEMTs Enabled by Robust Nanofabrication Technologies,

I. Thayne, X. Cao, D. Moran, E. Boyd, K. Elgaid, H. McLelland, M. Holland, S. Thoms, C. Stanley, (*Nanoelectronics Research Centre, Dept. of Electronics and Electrical Engineering, University of Glasgow, Glasgow G12 8LT, Scotland, UK*)

### TU3\_1\_4 Ballistic GaInAs/AlInAs Devices Technology and

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## Characterization at Room Temperature,

J.S. Galloo<sup>1</sup>, Y. Roelens<sup>1</sup>, S. Bollaert<sup>1</sup>, E. Pichonat<sup>1</sup>, X. Wallart<sup>1</sup>, A.

Cappy<sup>1</sup>, J. Mateos<sup>2</sup>, T. Gonzales<sup>2</sup>, (<sup>1</sup>IEMN-UMR CNRS 8520, Villeneuve d'Ascq, BP 69, 59652, France, <sup>2</sup>Universidad de Salamanca, Plaza de la Merced s/n, 37008 Salamanca, Spain)

## TU3\_1\_5 Why is the Spin Field Effect Transistor Elusive?

S. Pramanik<sup>1</sup>, S. Bandyopadhyay<sup>1</sup>, and M. Cahay<sup>2</sup>, (<sup>1</sup>Dept. of Electrical Engineering, Virginia Commonwealth University, Richmond, VA 23284, USA, <sup>2</sup>Dept. of Electrical and Computer Engineering and Computer Science, University of Cincinnati, Cincinnati, OH 45221, USA)

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## 16.30-18.00 SESSION TU3\_2: NANOSTRUCTURES 1 (Chair: Y. Park)

### TU3\_2\_1 Effect of Topology on Coherent Transport Through Nanotube Junctions,

A. Marchi<sup>1</sup>, A. Bertoni<sup>2</sup>, S. Reggiani<sup>1</sup>, and M. Rudan<sup>1</sup>, (<sup>1</sup>Advanced Research Center on Electronic Systems (ARCES) and Dept. of Electronics (DEIS), University of Bologna, Italy, <sup>2</sup>INFM-S3 Research Center, Modena, Italy and ARCES, Bologna, Italy)

### TU3\_2\_2 High Frequency Characterization for the Single-Walled Carbon Nanotubes Using S-parameter,

M. Zhang, X. Huo, Q. Liang\*, Z.K. Tang\* and P.C.H. Chan, (Dept. of Electrical and Electronic Engineering and \*Dept. of Physics, Hong Kong University of Science and Technology, Hong Kong, China)

### TU3\_2\_3 Carbon Nanotube-Based Membranes: A Platform for Studying Nanofluidics,

J.K. Holt, H.G. Park, A. Noy, T. Huser, D. Eaglesham, and O. Bakajin, (Chemistry and Materials Science Directorate, Lawrence Livermore National Laboratory, Livermore, CA 94551, USA)

TU3\_2\_4 Metalloprotein-Based Field-Effect Transistor: A Prototype,  
G. Maruccio<sup>1</sup>, P. Visconti, A. Biasco, A. Bramanti, E. D'Amone, R. Cingolani, and R. Rinaldi, (National Nanotechnology Laboratory of INFM, University of Lecce, Via per Arnesano, 73100 Lecce, Italy, <sup>1</sup>also with Dept. of Physics, University of Lecce)

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TU3\_2\_5 Theoretical Investigation of Metal-Molecule Interface with  
Terminal Group,

P. Bai<sup>1</sup>, E. Li<sup>1</sup>, S. Yang<sup>1</sup>, P.A. Collier<sup>2</sup>, (<sup>1</sup>*Institute of High Performance Computing,  
Singapore 117528*, <sup>2</sup>*Singapore Institute of Manufacturing Technology, Singapore 638075*)

TU3\_2\_6 Schottky Barrier Behavior of Metallic Multi-wall Carbon  
Nanotube on-Metal Systems,

Quoc Ngo<sup>1,2</sup>, Shoba Krishnan<sup>1</sup>, Alexis Stimpfle<sup>1</sup>, M. Meyyappan<sup>2</sup>, and  
Cary Y. Yang<sup>1</sup> (<sup>1</sup>*Center for Nanostructures, Santa Clara University, Santa Clara, California, USA*,  
<sup>2</sup>*Center for Nanotechnology, NASA Ames Research Center, Moffett Field, California, USA*)

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**16.30-18.00 SESSION TU3\_3 TEACHING  
NANOTECHNOLOGY  
(Chair: A. Csurgay)**

18.15-19.30 POSTER SESSION I (see below)

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**WEDNESDAY AUG. 18th**

**8.45-10.45 WE\_PL: PLENARY SESSION**  
(Chair: M. Meyyapan)

**WE\_PL\_1 8.45 Plenary speaker: Technology and  
Application Trends in Nano-Electronics**

Christoph Kutter (*Infineon Technologies AG, Corporate Research, München, Germany*)

**WE\_PL\_2 9. 45 Plenary speaker: Title to be announced**

Angela Belcher (*Department of Materials Science and Engineering, Massachusetts Institute of  
Technology, Cambridge, MA, USA*)

**10.45 Coffee break**

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## 10.15-12.45 SESSION WE1\_1: MOLECULAR ELECTRONICS (Chair: A. Di Carlo)

WE1\_1\_1 Invited talk: Transport and electrostatics in metallic carbon nanotubes

M. P. Anantram, A. Svizhenko and T. R. Govindan (*Center for Nanotechnology, NASA Ames Research Center, Moffett Field, CA, USA*)

WE1\_1\_2 Measurement of I-V Characteristic of Organic Molecules Using Step Junction,

K. Lee, J. Choi, and D.B. Janes, (*School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN 47907, USA*)

WE1\_1\_3 Conductance Investigations of Stretched Molecules,

G. Speyer, R. Akis, and D.K. Ferry, (*Dept. of Electrical Engineering and Center for Solid State Electronics Research, Arizona State University, Tempe, AZ 85287, USA*)

WE1\_1\_4 Conductance Modulation in Molecular Devices via Field-Induced Conformational Change,

M. Girlanda<sup>1</sup>, I. Cacelli<sup>1</sup>, A. Ferretti<sup>2</sup>, and M. Macucci<sup>3</sup>, (<sup>1</sup>*Dipartimento di Chimica e Chimica Industriale, Università degli Studi di Pisa, Via Risorgimento 35, I-56122 Pisa, Italy*, <sup>2</sup>*IPCF-CNR, Pisa, Italy*, <sup>3</sup>*Dipartimento di Ingegneria dell'Informazione, Università degli Studi di Pisa, Via Caruso, I-56122 Pisa, Italy*)

WE1\_1\_5 Transistor Effects and in situ STM of Redox Molecules at Room Temperature,

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T. Albrecht<sup>1</sup>, A. Guckian<sup>2</sup>, J. Ulstrup<sup>1</sup>, H. Vos<sup>2</sup>, (<sup>1</sup>*Technical University of Denmark (DTU), Dept. of Chemistry, Dk-2800 Lyngby,* <sup>2</sup>*Dublin City University (DCU), School of Chemical Sciences, Dublin 9, Ireland*)

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## 10.15-12.45 SESSION WE1\_2: SPINTRONICS (Chair: S. Bandyopadhyay)

### WE1\_2\_1 Application of Mesoscopic Magnetic Rings for Logic Devices,

A. Imre<sup>1</sup>, L. Zhou<sup>1</sup>, A. Orlov<sup>1</sup>, G. Csaba<sup>2</sup>, G. H. Bernstein<sup>1</sup>, W. Porod<sup>1</sup>, and V. Metlushko<sup>3</sup>, (<sup>1</sup>Center for Nano Science and Technology, Dept. of Electrical Engineering, University of Notre Dame, Notre Dame, IN 46556, USA, <sup>2</sup>Institute for Nanoelectronics, TU Munich, Munich, Germany, <sup>3</sup>University of Illinois at Chicago, Chicago, IL 60607, USA)

### WE1\_2\_2 Spin Polarized Injectors for Organic Light Emitting Diodes,

E. Arisi<sup>1</sup>, I. Bergenti<sup>1</sup>, V. Dediu<sup>1</sup>, T. Mertelj<sup>2</sup>, M. Murgia<sup>1</sup>, A. Riminucci<sup>1</sup>, G. Ruani<sup>1</sup>, and C. Taliani<sup>1</sup>, (<sup>1</sup>Istituto per lo studio dei Materiali Nanostrutturati, CNR, Bologna, Italy, <sup>2</sup>Dept. of Mathematics and Physics, University of Ljubjana, 1000 Ljubjana, Slovenia)

### WE1\_2\_3 Invited talk: Ferromagnetic semiconductors for nanospintronics

Tomasz Dietl (*Institute of Physics, Polish Academy of Sciences and ERATO Semiconductor Spintronics JST Project, Warszawa, Poland*)

### WE1\_2\_4 Invited talk: Electrical Magnetization Reversal in Ferromagnetic Semiconductor Structures

Hideo Ohno (*Laboratory for Nanoelectronics and Spintronics Research Institute of Electrical Communication Tohoku University, JAPAN ERATO Semiconductor Spintronics Project, JST, Japan*)

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## 10.15-12.45 SESSION WE1\_3: NANOSENSORS (Chair: B. Courtois)

### WE1\_3\_1 Self-Assembled Silicon Nano-Bridges as an Enabler for Nano-Sensors,

T.I. Kamins, M.S. Islam, S. Sharma, and R.S. Williams, *(Quantum Science Research, Hewlett-Packard Laboratories, Palo Alto, CA 94304, USA)*

### WE1\_3\_2 Ultra-Small Site Temperature Sensing by Carbon Nanotube Thermal Probes,

F. Arai, C. Ng, P. Liu, L. Dong, Y. Imaizumi, K. Maeda, H. Maruyama, A. Ichikawa and T. Fukuda, *(Dept. of Micro System Engineering, Nagoya University, Nagoya, Aichi, 464-8603, Japan)*

### WE1\_3\_3 Piezoresistive Behaviour of Single Wall Carbon Nanotubes,

P. Regoliosi<sup>1</sup>, A. Reale<sup>1</sup>, A. Di Carlo<sup>1</sup>, S. Orlanducci<sup>2</sup>, M.L. Terranova<sup>2</sup>, P. Lugli<sup>3</sup> *(<sup>1</sup>Dept. of Electronic Engineering, Univ. of Rome Tor Vergata, Rome, 00133 Italy, <sup>2</sup>Dept. of Science and Chemical Technology, Univ. of Rome Tor Vergata, Rome, 00133 Italy and INFN <sup>3</sup>Lehrstuhl für Nanoelektronik, TU München, Arcisstrasse 21 München, D-80333 Germany)*

### WE1\_3\_4 Field Emission of Telescoping Multi-Walled Carbon Nanotubes,

Lixin Dong<sup>1,2</sup>, Fumihito Arai<sup>1</sup>, Toshio Fukuda<sup>1</sup>, and Bradley J. Nelson<sup>3</sup> *(<sup>1</sup>Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, <sup>2</sup>Currently ETH-*

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Zurich, <sup>3</sup> Swiss Federal Institute of Technology (ETH), Zurich, Switzerland)

## WE1\_3\_5 Estimation of the Transfer Function of a Microcantilever Used in Atomic Force Microscopy,

M. Stark<sup>1</sup>, R. Guckenberger<sup>1</sup>, A. Stemmer<sup>2</sup>, R. W. Stark<sup>2,3</sup>, (<sup>1</sup>Max-Planck-  
Institut für Biochemie, 82152 Martinsried, Germany, <sup>2</sup>Swiss Federal Institute of Technology Zurich, ETH  
Center CLA, 8092 Zurich, Switzerland, <sup>3</sup>Center for Nanoscience and Ludwig-Maximilians-Universität, 80333  
Munich, Germany)

## WE1\_3\_6 Ultra-Low-Power Polymer Thin Film Encapsulated Carbon Nanotube Thermal Sensors,

C.K.M. Fung and W.J. Li, (Centre for Micro and Nano Systems, The Chinese University of  
Hong Kong, Hong Kong SAR)

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**14.30-16.00 SESSION WE2\_1: NANOCIRCUITS**  
**(Chair: W. Mathis)**

**WE2\_1\_1 Invited talk: Circuit Models for Physically-Coupled Nanoelectronic Device Architectures**

Wolfgang Porod and Arpad Csurgay (*Center for Nano Science and Technology, University of Notre Dame, Notre Dame, IN, USA*)

**WE2\_1\_2 Cellular Nonlinear Network Based on Semiconductor Tunneling Structure with a Self-Assembled Quantum Dot Layer,**

A. Khitun and K.L. Wang, (*Device Research Laboratory, Electrical Engineering Dept., MARCO Focus Center on Functional Engineered Nano Architectonics (FENA), University of California at Los Angeles, Los Angeles, California, 90095-1594, USA*)

**WE2\_1\_3 Cellular Neural/Nonlinear Networks Using Resonant Tunneling Diode,**

S.-R. Li, P. Mazumder and L.O. Chua, (*Dept. of EECS, The University of Michigan, Ann Arbor, MI, 48109, USA*)

**WE2\_1\_4 Dynamic Sparing and Error Correction Techniques for Fault Tolerance in Nanoscale Memory Structures,**

C.M. Jeffery, A. Basagalar, and R.J.O. Figueiredo, (*University of Florida, Gainesville, FL, 32611, USA*)

**WE2\_1\_5 Carbon Nanotubes for Quantum-Dot Cellular Automata**

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Clocking,

S.E. Frost<sup>1</sup>, T.J. Dysart<sup>1</sup>, P.M. Kogge<sup>1</sup> and C.S. Lent<sup>2</sup>, (<sup>1</sup>*Dept. of Computer Science and Engineering,* <sup>2</sup>*Dept. of Electrical Engineering, University of Notre Dame, Notre Dame, IN 46556, USA)*

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## 14.30-16.00 SESSION WE2\_2: NANOSTRUCTURES 2 (Chair: M. Sitti\*)

### WE2\_2\_1 Use of an Organic Template Structure for the Manipulation of Nano-Scale Objects,

S.J.H. Griessel, M. Lackinger, and W.M. Heckl, *(Dept. für Geo- und Umweltwissenschaften, Ludwig Maximilians Universität München, Theresienstr. 41, 80333 München)*

### WE2\_2\_2 Growth of ZnSe Nanowires by Molecular Beam Epitaxy,

A. Colli<sup>1</sup>, F. Martelli<sup>2</sup>, S. Rubini<sup>2</sup>, C. Ducati<sup>3</sup>, S. Hofmann<sup>1</sup>, A. C. Ferrari<sup>1</sup>, J. Robertson<sup>1</sup>, and A. Franciosi<sup>2,4</sup>, *(<sup>1</sup>Dept. of Engineering, University of Cambridge, Cambridge CB2 1PZ, UK., <sup>2</sup>Laboratorio Nazionale TASC-INFM, Area Science Park, 34012 Trieste, Italy, <sup>3</sup>Dept. of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK, <sup>4</sup>Dipartimento di Fisica, Università di Trieste, 34127 Trieste, Italy)*

### WE2\_2\_3 Platinum/Erbium Disilicide Nanowire Arrays on Si(001),

R. Ragan, S. Kim, D.A.A. Ohlberg, and  
R. Stanley Williams, *(Hewlett-Packard Laboratories, Quantum Science Research, Palo Alto, CA, 94304, USA)*

### WE2\_2\_4 Measurements with an Atomic Force Microscope Using a Long Travel Nanopositioning Machine,

N. Hofmann, T. Hausotte, G. Jäger and E. Manske, *(Technische Universität Ilmenau Institute of Measurement- and Sensor-Technology, 98693 Ilmenau)*

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WE2\_2\_5 Fracture Mechanical Characterization of Micro- and Nano-Filled Polymers by a Combined Experimental and Simulative Procedure,

B. Wunderle<sup>1</sup>, D. Dermitzaki<sup>2</sup>, J. Keller<sup>1</sup>, Di. Vogel<sup>1</sup>, B. Michel<sup>1</sup>,

*(Fraunhofer Institute for Reliability and Microintegration (IZM), Dept. Mechanical Reliability and Micro Materials, Gustav-Meyer-Allee 25, D-13355 Berlin, Germany, <sup>2</sup>Heriot-Watt University Edinburgh, School of Engineering and Physical Sciences, Riccarton Campus, EH14 4AS, UK)*

WE2\_2\_6 Long-Range Ordered Self-Assembled InAs Quantum Dots on (110) GaAs Grown with Molecular Beam Epitaxy,

D. Schuh, J. Bauer, R. Schulz, E. Uccelli, F. Hofbauer, A. Kress, J.J.

Finley, and G. Abstreiter, *(Walter Schottky Institut, Technische Universität München, Am Coulombwall 3, D-85748 Garching, Germany)*

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## 14.30-16.00 SESSION WE2\_3: NANOFABRICATION 2 (Chair: G.H. Bernstein\*)

WE2\_3\_1 Ni-P-CNTs Nanocomposite Film for MEMS Applications,  
G.-R. Shen<sup>1</sup>, L.-N. Tsai<sup>2</sup>, T.Y. Chao<sup>1</sup>, Y.-T. Cheng<sup>1</sup>, T. K. Lin<sup>3</sup>, W.

Hsu<sup>2</sup>, (<sup>1</sup>Microsystems Integration Laboratory, Dept. of Electronics Engineering, <sup>2</sup>Dept. of Mechanical Engineering, National Chiao Tung University, 1001 Ta Hsueh Road, Hsinchu, Taiwan, 300, ROC, <sup>3</sup>Dept. of Chemical Engineering, Hwa Hsia College of Technology & Commerce.)

WE2\_3\_2 Pure Metal Deposit Using Multi-Walled Carbon Nanotubes  
Decorated with Ruthenium Dioxide Super-Nanoparticles,

F. Arai<sup>1</sup>, P. Liu<sup>1</sup>, L. Dong<sup>1</sup>, T. Fukuda<sup>1</sup>, T. Noguchi<sup>2</sup> and K.

Tatenuma<sup>2</sup>, (<sup>1</sup>Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, <sup>2</sup>KAKEN Inc., Hori-cho, Mito, Ibaraki 310-0903, Japan)

WE2\_3\_3 Nanoimprint - A Tool for Realizing Nano-Bio Research,

P. Carlberg<sup>1</sup>, F. Johansson<sup>1</sup>, T. Mårtensson<sup>1</sup>, R. Bunk<sup>1</sup>, M. Beck<sup>1</sup>, F.  
Persson<sup>1</sup>, M. Borgström<sup>1</sup>, S.G. Nilsson<sup>1</sup>, B. Heidari<sup>4</sup>, M. Grazcyk<sup>1</sup>, I.

Maximov<sup>1</sup>, E.-L. Sarwe<sup>1</sup>, T.G.I. Ling<sup>1</sup>, A. Månsson<sup>3</sup>, M. Kanje<sup>2</sup>, W.

Seifert<sup>1</sup>, L. Samuelson<sup>1</sup>, L. Montelius<sup>1</sup>, (<sup>1</sup>Dept. Solid State Physics & The Nanometer Consortium, Lund University, Sweden, <sup>2</sup>Dept. of Cell and Organism Biology, Lund University, Sweden, <sup>3</sup>Dept. of Chemistry and Biomedical Sciences, University of Kalmar, Sweden.)

WE2\_3\_4 Electron Beam Lithography and Liftoff of Molecules and  
DNA Rafts,

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G.H. Bernstein, W. Hu, Q. Hang, K. Sarveswaran\*, and M.

Lieberman\*, (*Dept. of Electrical Engineering and \*Dept. of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN 46556, USA*)

**WE2\_3\_5 Invited talk: Laser Assisted Direct Imprint and Guided Self-Assembly – Enabling Engines for Nanotechnology**

S. Chou (*Department of Electrical Engineering, Princeton University, USA*)

16.00-16.30 Coffee break

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**16.30-17.30 SESSION WE3\_1: NANOPHOTONICS 2**  
(Chair: J. Wolter)

**WE3\_1\_1 Invited talk: Progress in Quantum dots for future nano-photonic devices**

Yasuhiko Arakawa (*RCAST and IIS, University of Tokyo, Tokyo, Japan*)

**WE3\_1\_2 Modeling Quantum Dots in Conventional and Annular III-V Micro-Pillar Micro-Cavities for Single-Photon Sources,**

Y.-L.D. Ho, M.J. Cryan, I.J. Craddock, C.J. Railton, and J.G. Rarity,  
(*Centre for Communications Research, Dept. of Electrical and Electronic Engineering, University of Bristol, Queen's Building, University Walk, Bristol, BS8 1TR, United Kingdom*)

**WE3\_1\_3 Imprint Lithography as a Tool for the Fabrication of Organic-Inorganic Vertical Microcavities,**

M. De Vittorio, M.T. Todaro, M. Mazzeo, L. Martiradonna, T. Stomeo, M. Anni, R. Cingolani, and G. Gigli, (*NNL-INFM, Dipartimento di Ingegneria dell'Innovazione, Università di Lecce, Via Arnesano, Lecce-73100 Italy*)

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## 16.30-17.30 SESSION WE3\_2: NANO-ELECTRONICS 3 (Chair: A. Asenov)

### WE3\_2\_1 Robustness of Readout Devices for Si-Based Quantum Computing,

K.H. Lee<sup>1</sup>, A.D. Greentree<sup>1,2</sup>, V. Chan<sup>1</sup>, T.M. Buehler<sup>1</sup>, R. Brenner<sup>1</sup>,  
A.S. Dzurak<sup>1</sup>, A.R. Hamilton<sup>1</sup> and R.G. Clark<sup>1</sup>, (<sup>1</sup>Centre for Quantum Computer  
Technology, Schools of Physics and Electrical Engineering, University of New South Wales, NSW 2052,  
Australia, <sup>2</sup>Centre for Quantum Computer Technology, School of Physics, University of Melbourne, VIC 3010,  
Australia)

### WE3\_2\_2 On the Modeling of Semiconductor Quantum Effects for Circuit Simulation,

F. Felgenhauer, S. Fabel, and W. Mathis, (University of Hannover, Electro Magnetic  
Theory Group of the Institute of Electromagnetism Theory and Microwave Technique, Appelstr. 9A, 30167  
Hannover, Germany)

### WE3\_2\_3 Split Current Quantum Cellular Automata: Device and Logic Gates,

K. Walus, R.A. Budiman, M. Mazur, G.A. Jullien, and G. Schulhof,  
(ATIPS Laboratory, Dept. of Electrical and Computer Engineering, University of Calgary, Calgary, Alberta  
T2N-1N4, Canada)

### WE3\_2\_4 Optical Gain in an Interband-Resonant-Tunneling-Diode,

B. Gelmont<sup>1</sup> and D. Woolard<sup>2</sup>, (<sup>1</sup>ECE Dept., the University of Virginia, Charlottesville, VA  
22904, USA, <sup>2</sup>U.S. Army Research Laboratory, U.S. Army Research Office, RTP, NC 27709, USA)

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## 16.30-17.30 SESSION WE3\_3: NANOBIOELECTRONICS (Chair: C. Ruggiero)

WE3\_3\_1 Surface Modification and Bioconjugation of Colloidal Nanocrystals to Form Building Blocks with Molecular Recognition,  
R.A. Sperling<sup>1</sup>, T. Pellegrino<sup>2</sup>, S. Kudera<sup>1</sup>, A.M. Javier<sup>1</sup>, L. Manna<sup>3</sup>,  
and W.J. Parak<sup>1</sup>, (<sup>1</sup>Center for NanoScience, Ludwig-Maximilians-Universität München, Munich, Germany, <sup>2</sup>Dept. of Chemistry and Pharmacology, University of Bari, Italy, <sup>3</sup>National Nanotechnology Lab of INFN, Via Arnesano, Lecce, Italy)

WE3\_3\_2 Brownian Dynamics: Molecular Systems Modeling and Control,

M.A. Lyshevski, (*Microsystems and Nanotechnologies, 70 Angels Path, Webster, NY 14580-4400, USA*)

WE3\_3\_3 Invited talk: Biological applications and biocompatibility of nanocrystals

C. Kirchner<sup>1</sup>, T. Pellegrino<sup>1,2</sup>, S. Kudera<sup>1</sup>, T. Liedl<sup>1</sup>, A.M. Javier<sup>1</sup>,  
H.E. Gaub<sup>1</sup> and W. Parak<sup>1</sup>, (<sup>1</sup>Center for Nanoscience, Ludwig-Maximilians Universität, München, Germany, <sup>2</sup>Dept. of Chemistry and Pharmacology, University of Bari, Bari, Italy)

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17.45-19.15 POSTER SESSION II (see below)

**20.00 Conference dinner**

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THURSDAY AUG. 19th

**8.45-10-15 SESSION TH1\_1: NANOMECHANICS**  
(Chair: M. Wybourne)

TH1\_1\_1 Nano-Electromechanical Transistor Operated as a Bi-Polar Current Switch,

R.H. Blick<sup>1</sup> and D.V. Scheible<sup>2</sup>, (<sup>1</sup>Electrical & Computer Engineering, University of Wisconsin-Madison, Madison, WI 53706, USA, <sup>2</sup>Center for NanoScience, Ludwig-Maximilians-Universität, 80539 München, Germany)

TH1\_1\_2 In-Situ Nanomechanical Studies of Carbon Nanotube Bundles,

P. Jaroenapibal, D.E. Luzzi, and S. Evoy, (Dept. of Materials Science and Engineering, The University of Pennsylvania, Philadelphia, PA 19104, USA)

TH1\_1\_3 Single Molecule Detection and Macromolecular Weighting Using an All-Carbon-Nanotube Nanoelectromechanical Sensor,

C. Roman, F. Ciontu, B. Courtois, (Tima Laboratory, 46. Av. Félix Viallet, Grenoble, 38031, France)

TH1\_1\_4 Novel Buckled Shapes of Free-Standing Mesoscopic Beams,

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S.M. Carr, W.E. Lawrence, and M.N. Wybourne, *(Dept. of Physics and Astronomy, Dartmouth College, Hanover, NH 03755, USA)*

**TH1\_1\_5 Invited talk: Nanoelectromechanical Sensors**

K.L. Ekinci,<sup>1,2</sup> Y.T. Yang,<sup>2</sup> X.M.H. Huang,<sup>2</sup> C. Callegari,<sup>2</sup> P. Feng<sup>2</sup> and M.L. Roukes<sup>2</sup> *(<sup>1</sup>) Aerospace and Mechanical Engineering, Boston University, Boston MA, <sup>2</sup>) Condensed Matter Physics, California Institute of Technology, Pasadena CA, USA)*

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## 8.45-10-15 SESSION TH1\_2: "DURINT" PROJECT - NANO-ELECTRONICS (Chair: H. Cui)

TH1\_2\_1 Invited talk: Inelastic Electron Tunneling Spectroscopy  
of an Alkane SAM

W. Wang, T. Lee, I. Kretzschmar, and M. A. Reed *(Departments of Electrical  
Engineering, Applied Physics, and Physics, Yale University, New Haven, CT, USA)*

TH1\_2\_2 Electronic Structure and Dielectric Behavior of Finite-  
Length Single-Walled Carbon Nanotubes,

Y. Li, D. Lu, S. Rotkin, K. Schulten and U. Ravaioli, *(Beckman Institute for  
Advanced Science and Technology, University of Illinois at Urbana-Champaign Urbana Illinois 61801, USA)*

TH1\_2\_3 Molecular Elements on Silicon Substrates: Modeling Issues  
and Device Prospects,

A.W. Ghosh, G.-C. Liang, T. Rakshit, D. Kienle, and S. Datta, *(School of  
Electrical and Computer Engineering, Purdue, University, W. Lafayette, IN 47907, USA)*

TH1\_2\_4 Theoretical Research of Mixed-Valence Transition Metal  
Complex for Molecular Computing,

Peiji Zhao, Dwight Woolard, and Jorge M. Seminario, *(Dept. of ECE, North  
Carolina State University, USA)*

TH1\_2\_5 Fabrication and Electrical Characterization of

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Au/Molecule/GaAs Devices,

S. Lodha and D.B. Janes, *(School of Electrical and Computer Engineering, Purdue University,  
West Lafayette, IN 47907-2035, USA)*

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## 8.45-10-15 SESSION TH1\_3: NANOFABRICATION 3 (Chair: L. Samelson)

### TH1\_3\_1 Simulation of Electrical Characteristics of Surrounding - and Omega - Shaped - Gate Nanowire FinFETs,

C.-S. Tang<sup>1</sup>, S.-M. Yu<sup>1</sup>, H.-M. Chou<sup>1</sup>, J.-W. Lee<sup>2</sup>, and Y. Li<sup>1,2</sup>, (<sup>1</sup>National Chiao Tung University, Hsinchu City, Hsinchu 300, Taiwan, <sup>2</sup>National Nano Device Laboratories, Hsinchu City, Hsinchu 300, Taiwan)

### TH1\_3\_2 Nanoscaled Double Y-Branch Junction Operating as Room Temperature RF to DC Rectifier,

L. Bednarz<sup>1</sup>, Rashmi<sup>1</sup>, B. Hackens<sup>2</sup>, H. Boutry<sup>1</sup>, V. Bayot<sup>1</sup>, and I. Huynen<sup>1</sup>, S.-J. Galloo<sup>2</sup>, Y. Roelens<sup>2</sup>, S. Bollaert<sup>2</sup>, E. Pichonat<sup>2</sup>, and A. Cappy<sup>2</sup>, (<sup>1</sup>Cermin, UCL, 1348 Louvain-la-Neuve, Belgium, <sup>2</sup>IEMN-UMR CNRS 8520, Villeneuve d'Ascq, PB 69, 59652, France)

### TH1\_3\_3 A Novel Single Electron SRAM Architecture,

S. Mahapatra, A.M. Ionescu, (Electronics Laboratory (LEG), Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland)

### TH1\_3\_4 Silicon Nanocrystals: From Coulomb Blockade to Memory Arrays,

R.F. Steimle, R. Rao, M. Sadd, C. Swift, B. Hradsky, S. Straub, T. Merchant, M. Stoker, C. Parikh, S. Anderson, M. Rossow, J. Yater,

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B. Acred, K. Harber, E. Prinz, B.E. White Jr., and R. Muralidhar,  
*Technology Solutions Organization, Motorola SPS, Austin, TX, 78721, USA)*

TH1\_3\_5 Modeling Electronic Behavior of Carbon Nanotube  
Junction Devices,

Q.W. Shi<sup>1</sup> and J. Chen<sup>2</sup>, (<sup>1</sup>*Dept. of Physics, University of Science and Technology of China,*  
<sup>2</sup>*Division of Engineering, Brown University, RI 20912, USA)*

TH1\_3\_6 Microstructure and Nanoelectronics of Single GaN  
Nanowire with Well-Defined p-n Junction,

G. Cheng<sup>1</sup>, R. Munden<sup>1</sup>, I. Kretzschmar<sup>1</sup>, A. Sanders<sup>1</sup>, E. Stern<sup>1</sup>,  
M.A. Reed<sup>1</sup>, M. Moskovits<sup>2</sup>, J. Zhang and Y. Wu<sup>3</sup>, (<sup>1</sup>*Dept. of Electrical  
Engineering and Applied Physics, Yale University, P.O. Box 208284, New Haven, CT 06520, USA,* <sup>2</sup>*Dept. of  
Chemistry & Biochemistry, University of California, Santa Barbara, CA 93106,* <sup>3</sup>*Dept. of Materials, University  
of California, Santa Barbara, CA 93106, USA)*

10.15-10.45 Coffee break

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## 10.45-12.15 SESSION TH2\_1: NANOBIOELECTRONICS 2 (Chair: W. M. Heckl\*)

### TH2\_1\_1 Invited talk: Motor Proteins to Engineer a Monorail at the Nanoscale

Henry Hess<sup>1</sup> and Viola Vogel<sup>1,2</sup> (<sup>1</sup>Center of Nanotechnology and Department of Bioengineering, University of Washington, Seattle, Washington 98195, and <sup>2</sup>Department of Materials, Swiss Federal Institute of Technology-ETH, Zürich, Switzerland).

### TH2\_1\_2 Interactive DNA Sequence and Structure Design for DNA Nanotechnology and DNA Computation,

M. Zhang<sup>1</sup>, C.L. Sabharwal<sup>2</sup>, W. Tao<sup>3</sup>, T.-J. Tarn<sup>4</sup>, N. Xi<sup>5</sup>, and G. Li<sup>5</sup>,  
(<sup>1</sup>Life Sciences and Chemical Analysis Division, Agilent Technologies, CA, USA, <sup>2</sup>Dept. of Computer Science, University of Missouri, Rolla, MO, USA, <sup>3</sup>Brooks Automation, CA, USA, <sup>4</sup>Dept. of Electrical Engineering, Washington University, St. Louis, USA, <sup>5</sup>Dept. of Electrical Engineering, Michigan State University, MI, USA)

### TH2\_1\_3 Integrated Sensor Design Using Ion Channels Inserted into Lipid Bilayer Membranes,

M. Goryll<sup>1</sup>, S. Wilk<sup>1</sup>, G.M. Laws<sup>1</sup>, S.M. Goodnick<sup>1</sup>, T.J. Thornton<sup>1</sup>, M. Saraniti<sup>2</sup>, J.M. Tang<sup>3</sup>, and R.S. Eisenberg<sup>3</sup>, (<sup>1</sup>Arizona State University, Dept. of Electrical Engineering, Tempe, AZ 85287, USA, <sup>2</sup>Illinois Institute of Technology, Dept. of Electrical and Computer Engineering, Chicago, IL 60616, USA, <sup>3</sup>Rush Medical College, Dept. of Molecular Biophysics and Physiology, Chicago, IL 60612, USA)

### TH\_2\_1\_4 Control and Function for DNA Nanodevices,

F.C. Simmel, W.U. Dittmer, and A. Reuter, (Sektion Physik and Center for Nanoscience, University of Munich, Geschwister-Scholl-Platz 1, 80539 München, Germany)

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## TH2\_1\_5 Experimental Studies of DNA Electrical Properties Using AFM Based Nano-Manipulator,

G. Li<sup>1</sup>, N. Xi<sup>1</sup>, A. Saeed<sup>1</sup>, H. Chen<sup>1</sup>, J. Zhang<sup>1</sup>, W.J. Li<sup>2</sup>, C.K.M.

Fung<sup>2</sup>, R.H.M. Chan<sup>2</sup>, M. Zhang<sup>3</sup> and T.-J. Tarn<sup>4</sup>, (<sup>1</sup>Dept. of Electrical and Computer Engineering, Michigan State University, East Lansing, Michigan, USA, <sup>2</sup>Dept. of Automation & Computer-Aided Engineering, The Chinese University of Hong Kong, Hong Kong, China, <sup>3</sup>Life Sciences Division, Agilent Technologies, 3500 Deer Creek Road, Palo Alto, CA 94304, USA, <sup>4</sup>Dept. of Systems Science and Mathematics, Washington University at St. Louis, MO 63130, USA)

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**10.45-12.15 SESSION TH2\_2: "DURINT" PROJECT -  
NANOCIRCUITS  
(Chair: J. Fortes)**

TH2\_2\_1 Choice of Flat-Band Voltage,  $V_{DD}$  and Diameter of  
Ambipolar Schottky-Barrier Carbon Nanotube Transistors in Digital  
Circuit Design,

A. Raychowdhury, J. Guo, K. Roy, and M. Lundstrom, *(Dept. of Electrical and  
Computer Engineering, Purdue University, USA)*

TH2\_2\_2 Design and Performance Analysis of Novel Nanoscale  
Associative Memory,

B.A. Davis, J.C. Principe, and J.A.B. Fortes, *(Electrical and Computer Engineering,  
University of Florida, Gainesville, FL, 32611, USA)*

TH2\_2\_3 On Single Electron Technology Full Adders,

M. Sulieman and V. Beiu *(School of EE&CS, Washington State University, Pullman, WA,  
99163-2752, USA)*

TH2\_2\_4 New Complementary Logic Circuits Using Coupled  
Quantum Wells,

Y. Katayama, *(IBM Research, Tokyo Research Laboratory, 1623-14 Shimotsuruma, Yamato,  
Kanagawa 242-8502, Japan)*

TH2\_2\_5 A Circuit Approach for Implementing Quantum Memory,

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H.-W. Wang, I.-M. Tsai, S.-Y. Kuo, *(Dept. of Electric Engineering, National Taiwan University, Taipei, Taiwan)*

TH2\_2\_6 Binary Addition Based on Single Electron Tunneling Devices,

C. Lageweg, S. Cotozana, S. Vassiliadis, *(Electrical Engineering Dept., Delft University of Technology, Delft, The Netherlands)*

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## 10.45-12.15 SESSION TH2\_3: NANO-ELECTRONICS 4 (Chair: R. Ragan)

TH2\_3\_1 Suppression of Quantum Interference Induced Vortices and Threshold Voltage Shift Due to the Inclusion of Inelastic Scattering in Ultra Small Fully Depleted SOI MOSFETs,

M.J. Gilbert and D.K. Ferry, *(Dept. of Electrical Engineering and Center for Solid State Electronics Research, Arizona State University, Tempe, AZ 85287-5706, USA)*

TH2\_3\_2 Quantum Mechanical and Transport Aspects of Resolving Discrete Charges in Nano-CMOS Device Simulation,

A. Asenov, G. Roy, C. Alexander, A.R. Brown, J.R. Watling and S.

Roy, *(Device Modeling Group, Dept. Electronics & Electrical Engineering, University of Glasgow, Glasgow G12 8LT, Scotland)*

TH2\_3\_3 Three-Dimensional Simulation of Single Electron Transistors,

G. Fiori<sup>1</sup>, M. Pala<sup>1</sup>, and G. Iannaccone<sup>1,2</sup>, *(<sup>1</sup>Dipartimento di Ingegneria dell'Informazione, Università degli Studi di Pisa, Via Caruso, I-56122 Pisa, Italy, <sup>2</sup>IEIIT-CNR, Pisa, Italy)*

TH2\_3\_4 How Quantum Effects and Unintentional Doping Affect the Threshold Voltage of Narrow-Width SOI Devices,

D. Vasileska and S.S. Ahmed, *(Dept. of Electrical Engineering, Arizona State University, Tempe AZ, 85287-5706, USA)*

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## TH2\_3\_5 The Computational Abilities of Fixed Random Structures,

J.C. Lusth and E.A. Skaug, *(University of Arkansas, Fayetteville, AR, 72701, USA, University of Wisconsin, Madison, WI, 53719 USA)*

## TH2\_3\_6 Power Dissipation in Nanomagnetic Logic Devices,

G. Csaba<sup>1</sup>, P. Lugli<sup>1</sup>, W. Porod<sup>2</sup>, *(<sup>1</sup>Institute for Nanoelectronics, Technical University of Munich, Arcisstrasse 21, D-80333 Munich, Germany, <sup>2</sup>Center for Nano Science and Technology, Electrical Engineering Dept., University of Notre Dame, 275 Fitzpatrick Hall, Notre Dame, IN 46556, USA)*

**12.30-14.15 Award Lunch**

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## 14.45-15.45 SESSION TH3\_1 (Late news papers)

## 14.45-15.45 SESSION TH3\_2: NANOMANIPULATION (Chair: F. Arai )

TH3\_2\_1 Nanomanipulation with 3D Visual and Force Feedback  
using Atomic Force Microscopes,

W. Vogl<sup>1</sup>, M.Sitti<sup>2</sup>, M.F. Zäh<sup>1</sup>, (<sup>1</sup>iwb, Technische Universität München, Garching 85748,  
Germany, <sup>2</sup>NanoRobotics Laboratory, Carnegie Mellon University, Pittsburgh, PA 15213, USA)

TH3\_2\_2 Augmented Reality Enhanced "Top-Down" Nano-  
Manufacturing,

G. Li, N. Xi, H. Chen, and A. Saeed, (Dept. of Electrical and Computer Engineering,  
Michigan State University, East Lansing, Michigan, USA)

TH3\_2\_3 Haptically Generated Paths of an AFM-Based  
Nanomanipulator Using Potential Fields,

M. Ammi and A. Ferreira, (Laboratoire Vision et Robotique, 10, Boulevard, Lahitolle, 18000,  
Bourges, France)

TH3\_2\_4 The Nanostructured Origami™ 3D Fabrication and  
Assembly Process for Nanomanufacturing,

H.J. In<sup>1</sup>, W. Arora<sup>2</sup>, T. Buchner<sup>1</sup>, S.M. Jurga<sup>1</sup>, H.I. Smith<sup>2</sup>, G.  
Barbastathisa<sup>1</sup>, (<sup>1</sup>Dept. of Mechanical Engineering, <sup>2</sup>Dept. of Electrical Engineering and Computer  
Science, Massachusetts Institute of Technology, Cambridge, MA 02139, USA)

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**14.30-18.10 SESSION TH\_SP: SPECIAL SYMPOSIUM ON  
“Applications of Nanotechnology in Medicine”  
(Chair: B. Wolf)**

**14.30-14.45 TH\_SP\_1 Opening remarks and introduction**

B. Wolf (*Heinz Nixdorf Lehrstuhl für Medizinische Elektronik, TU München, Munich, Germany*)

**14.45-15.15 TH\_SP\_2 Nanobiotechnology meets medical  
technology: projects and demands**

D. Wechsler, (*Verband Deutsche Ingenieure, Germany*)

**15.15-15.45 TH\_SP\_3 Applications on Nanotechnology in Medicine**

C. Alexiou, (*Dept. Otorhinolaryngology, head and neck surgery, Friedrich-Alexander-Universität, Erlangen, Germany*)

**15.45-16.05 TH\_SP\_4 New magnetic FeCoPt nanoparticles for  
biotechnology**

A. Hütten, (*Thin Films and Nanostructures, Universität Bielefeld, Bielefeld, Germany*)

**16.05-16.25 TH\_SP\_5 Field-controlled motion of sub-nano,  
nano and macroparticles**

M. Koch, (*Heinz Nixdorf Lehrstuhl für Medizinische Elektronik, TU München, Munich, Germany*)

**16.25-16.45 TH\_SP\_6 Drug delivery for nerve tissue regeneration**

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F. C. Soumetz<sup>1</sup>, M. Giacomini<sup>1</sup>, L. Pastorino<sup>1</sup>, J. B. Phillips<sup>2</sup>, R. A. Brown<sup>2</sup>, C. Ruggiero<sup>1</sup>, (<sup>1</sup>D.I.S.T. University of Genova, Via Opera Pia, 13, 16145 Genova, Italy, <sup>2</sup>University College London, Tissue Repair and Engineering Centre, United Kingdom)

**16.45-17.15** Coffee break

17.15-17.35 TH\_SP\_7 Localized nucleic acid delivery to living cells using nanobiotechnology approaches

C. Plank, (*Institute of experimental oncology, Klinikum Rechts der Isar, TU München, Munich, Germany*)

17.35-17.55 TH\_SP\_8 Magnetorelaxometry of magnetic nanoparticles: a new method for the quantitative and specific analysis of biomolecules

F. Ludwig, (*Institute für Elektrische Messtechnik und Grundlagen der Elektrotechnik, TU Braunschweig, Braunschweig, Germany*)

17.55-18.15 TH\_SP\_9 Aerosol delivery of DNA-loaded nanoparticles: factors influencing particle stability and gene transfer efficiency

C. Rudolph, (*Haunersches Kinderspital, Klinikum der Ludwig Maximilian Universität München, Munich, Germany*)

18.15-18.35 TH\_SP\_10 Atomic Force Microscopy in Ophthalmic Surgery

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M.P. De Santo<sup>1</sup>, M. Lombardo<sup>2</sup>, S. Serrao<sup>2</sup>, G. Lombardo<sup>1</sup>, and R. Barberi<sup>1</sup>, (<sup>1</sup>LICRYL – Dept. of Physics, Università della Calabria, Arcavacata di Rende, 87036, <sup>2</sup>Dept. of Ophthalmology, Catholic University of Rome, Rome, Italy)

18.35-18.55 TH\_SP\_11 Technical and physical aspects of controlling magnetic nanoparticles

T. Weyh and B. Gleich, (*Heinz Nixdorf Lehrstuhl für Medizinische Elektronik, TU München, Munich, Germany*)

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(\* not yet confirmed)



## POSTER SESSION I (Tuesday, Aug. 17<sup>th</sup>)

### TU-P1 Compact Current and Current Noise Models for Single-Electron Tunneling Transistors,

H. Chaohong<sup>1,2</sup>, S.D. Cotozana<sup>1</sup>, and J. Jianfei<sup>2</sup>, (<sup>1</sup>Computer Engineering Laboratory, Delft University of Technology, Delft, The Netherlands, <sup>2</sup>Research Institute of Micro/Nano Science and Technology, Shanghai Jiao Tong University, China)

### TU-P2 Quantum Well Electron Dynamics in a Parallel Magnetic Field,

N.J.M. Horing<sup>1</sup>, M.L. Glasser<sup>2</sup>, B. Dong<sup>1</sup> (<sup>1</sup>Dept. of Physics and Engineering Physics, Stevens Institute of Technology, Hoboken, New Jersey 07030, USA, <sup>2</sup>Dept. of Physics, Clarkson University, Potsdam, New York 13699, USA)

### TU-P3 Plasmon Resonances in Terahertz Photoconductivity,

N.J.M. Horing, (Dept. of Physics and Engineering Physics, Stevens Institute of Technology, Hoboken, New Jersey 07030, USA)

### TU-P4 Change In Electrical Characteristics Of Gallium Phosphide Nanowire Transistors Under Different Environments,

D. Kang<sup>1</sup>, W. Park<sup>1</sup>, B. Kim<sup>2</sup>, J. Kim<sup>2</sup>, C. Lee<sup>3</sup> (<sup>1</sup>Materials and Devices Lab, Samsung Advanced Institute Of Technology, Yongin City, Korea 449-712, <sup>2</sup>Chonbuk National University, Chonju 561-756, Korea, <sup>3</sup>Dept. of Nanotechnology, Hanyang University, Seoul 133-791, Korea)

### TU-P5 Correlation Between Plasmon Absorption and Terahertz Photoconductance in a Grid-Gated Double-Quantum Well FET,

V.V. Popov<sup>1</sup>, T.V. Teperik<sup>1</sup>, Yu.N. Zayko<sup>1</sup>, S.J. Allen<sup>2</sup>, N.J.M. Horing<sup>3</sup>,

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*(<sup>1</sup>Institute of Radio Engineering and Electronics (Saratov Division), Russian Academy of Sciences, 410019 Saratov, Russia, <sup>2</sup>Center for Terahertz Science and Technology, University of California, Santa Barbara, California, 93106, USA, <sup>3</sup>Dept. of Physics and Engineering Physics, Stevens Institute of Technology, Hoboken, New Jersey 07030, USA)*

## TU-P6 Fabrication of CaF<sub>2</sub>/Si/CaF<sub>2</sub> Resonant-Tunneling Diodes by B-Surfactant Enhanced Epitaxy of Si Quantum-Well Layers,

C.R. Wang, M. Bierkandt, B.H. Müller, E. Bugiel, and K.R. Hofmann,  
*(Institute for Semiconductor Devices and Electronic Materials, University of Hannover, Appelstr. 11A, 30167 Hannover, Germany)*

## TU-P7 Microtubules and Neuronal Nanobioelectronics,

S.E. Lyshevski, T. Renz\*, *(Dept. of Electrical Engineering, Rochester Institute of Technology Rochester, New York, 14623-5603, USA, \*Air Force Research Laboratory, Information Technology Directorate, 26 Electronic Parkway, Rome NY 13441, USA)*

## TU-P8 Carbon-Based Nanoelectronics: NanoICs with Fullerenes,

S.E. Lyshevski, *(Dept. of Electrical Engineering, Rochester Institute of Technology, Rochester, New York, 14623-5603, USA)*

## TU-P9 Semi-Empirical SPICE Models for Carbon Nanotube FET Logic,

C. Dwyer, M. Cheung, and D.J. Sorin, *(Dept. of Electrical and Computer Engineering, Duke University, Durham, NC 27708, USA)*

## TU-P10 Electrical and Material Characteristics of the Sub 5 nm Hafnium Doped Tantalum Oxide High k Film,

J. Lu and Y. Kuo, *(The Thin Film Nano and Microelectronics Research Laboratory, Texas A&M University, College Station, TX, 77843-3122, USA)*

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TU-P11 SPICE Implementation of a Compact Single Electron Tunneling Transistor Model,

C. Jia<sup>1,2</sup>, H. Chaohong<sup>1,2</sup>, S.D. Cotofana<sup>1</sup>, and J. Jianfei<sup>2</sup>, (<sup>1</sup>Computer Engineering Laboratory, Delft University of Technology, Delft, The Netherlands, <sup>2</sup>Research Institute of Micro/Nano Science and Technology, Shanghai Jiao Tong University, China)

TU-P12 Quantum Simulation of Nano-Scale Schottky Barrier MOSFETs,

M.Shin<sup>1</sup>, M. Jang<sup>2</sup>, S. Lee<sup>2</sup>, (<sup>1</sup>School of Engineering, Information and Communications University, Daejeon 305-714, Korea, <sup>2</sup>Nano-Electronics Device Team, ETRI, Daejeon 305-330, Korea)

TU-P13 Regular Array of Nanometer-Scale Devices Performing Logic Operations with Fault-Tolerance Capability,

A. Schmid and Y. Leblebici, (*Microelectronic Systems Laboratory, Swiss Federal Institute of Technology, CH-1015 Lausanne, Switzerland*)

TU-P14 The Tunneling Field Effect Transistor (TFET) Used in a Single-Event-Upset (SEU) Insensitive 6 Transistor SRAM Cell in Ultra-Low Voltage Applications,

T. Nirschl<sup>1,2</sup>, S. Henzler<sup>1</sup>, C. Pacha<sup>3</sup>, P.-F.Wang<sup>1</sup>, W. Hansch<sup>1</sup>, G. Georgakos<sup>2</sup>, and D. Schmitt-Landsiedel<sup>1</sup>, (<sup>1</sup>Technical University Munich, Institute for Technical Electronics, Theresienstrasse 90, 80290 Munich, Germany, <sup>2</sup>Infineon Technologies, Corporate Logic, <sup>3</sup>Infineon Technologies, Corporate Research)

TU-P15 Resonant Crossover of Terahertz Loss to Gain in a Bloch Oscillating InAs/AlSb Super-Superlattice,

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P.G. Savvidis<sup>1</sup>, B. Kolasa<sup>1</sup>, and S.J. Allen<sup>1</sup>, G. Lee<sup>2</sup>, (<sup>1</sup>Center for Terahertz Science and Technology, University of California, Santa Barbara, California, 93106, USA, <sup>2</sup>Agilent Laboratories, 3500 Deer Creek Rd., Palo Alto, CA 94304-1317, USA)

### TU-P16 Optoelectromagnetic Nanocrystals and Microoptoelectromechanical Systems,

M.A. Lyshevski, and S.E. Lyshevski (<sup>1</sup>Microsystems and Nanotechnologies, 70 Angels Path, Webster, NY 14580-4400, USA, <sup>2</sup>Dept. of Electrical Engineering, Rochester Institute of Technology, Rochester, New York 14623-5603, USA,)

TU-P17 Edge Detection at Height Profiles with Nano Resolution,  
S. Töpfer, R. Mastlylo, G. Linß, E. Manske, O. Kühn, U. Nehse,  
(Technische Universität Ilmenau, Ilmenau, Thuringia, 98693, Germany)

### TU-P18 Visible Frequency of Achromatic Quadrants Wave Plates Using the Artificial Birefringence,

H.-C. Huang<sup>1</sup>, M.-C. Chen<sup>2</sup>, P.-G. Luan<sup>2</sup>, J.-J. Yang<sup>1</sup> and C.-T. Lee<sup>2</sup>,  
(<sup>1</sup>Mechanical Industry Research Laboratories, Industrial Technology Research Institute, Hsinchu, 310, Taiwan, Republic of China, <sup>2</sup>Institute of Optical Sciences, National Central University, Chung-Li, 32054, Taiwan, Republic of China)

### TU-P19 Light Transmission Through Nanostructured Metal Films: Numerical Modeling and Experiment,

K. Caputa<sup>1</sup>, R. Gordon<sup>1</sup>, and B. Leathem<sup>2</sup>, (<sup>1</sup>Dept. of Electrical and Computer Engineering, University of Victoria, Victoria, BC, V8W 3P6, <sup>2</sup>Dept. of Physics, Simon Fraser University, Burnaby, BC, V5A 1S6)

### TU-P20 Self-Oscillation of Micromechanical Resonators,

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C.C. Höhberger, and K. Karrai, (Center for NanoScience, Ludwig-Maximilians-Universität München, Geschwister-Scholl-Platz 1, 80539 München, Germany)

### TU-P21 Annealed InGaAs Quantum Dot Thin p-Clad Laser Diodes for Integration,

P. Lever, M. Buda, H.H. Tan and C. Jagadish, (Dept. of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, Australian National University, Canberra, Australia, 2612)

### TU-P22 Quantum-Wired MOSFET Photodetector Fabricated by Conventional Photolithography on SOI Substrate,

J.-H. Park<sup>1,2</sup>, H. Kim<sup>1</sup>, I.-S. Wang<sup>2</sup>, and J.-K. Shin<sup>2</sup>, (<sup>1</sup>Korea Electronics Technology Institute, Kyunggi-do, 451-865, Republic of Korea, <sup>2</sup>Dept. of Electronics, Kyungpook National University, Daegu, 702-701, Republic of Korea)

### TU-P23 Dielectrophoretic Integration of Nanodevices with CMOS Circuitry,

S. Evoy<sup>1</sup>, N. DiLello<sup>1</sup>, V. Deshpande<sup>1</sup>, A. Narayanan<sup>2</sup>, and S. Raman<sup>2</sup>, (<sup>1</sup>Dept. of Electrical and Systems Engineering, The University of Pennsylvania, Philadelphia, PA 19104, USA, <sup>2</sup>Dept. of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA, 24061, USA.)

### TU-P24 Visible Photoluminescence and Conductometric Response of Tin Oxide Nanobelts to NO<sub>2</sub>: Toward a Selective Gas Sensor,

G. Faglia<sup>1</sup>, C. Baratto<sup>1</sup>, E. Comini<sup>1</sup>, M. Ferroni<sup>1</sup>, M. Zha<sup>2</sup>, G. Salviati<sup>2</sup>, A. Zappettini<sup>2</sup>, and G. Sberveglieri<sup>1</sup>, (<sup>1</sup>INFM and University of Brescia, Sensor Laboratory, Dept. of Chemistry and Physics for Engineering and for Materials, Via Valotti 9, I-25123 Brescia, Italy, <sup>2</sup>Istituto dei Materiali per l'Elettronica ed il Magnetismo, IMEM Institute - C.N.R., Parco delle Scienze - I-Parma)

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## TU-P25 Freely Suspended Nanostructure with No Substrate

### Beneath: Fabrication and Optical Imaging,

C. Meyer<sup>1</sup>, O. Sqalli<sup>2</sup>, H. Lorenz<sup>1</sup>, and K. Karrai<sup>1</sup>, (<sup>1</sup>Center for NanoScience and Physics Dept., Ludwig-Maximilians-University Munich, Germany, <sup>2</sup>Attocube Systems, Munich, Germany)

## TU-P26 A Biomedical Bone Nano Transducer,

K. Singh, (CBME, Indian Institute of Technology, New Delhi-110016, India, and SOET, IGNOU University, New Delhi-110068)

## TU-P27 Preparation of Thermo-Chromic Nanocomposite Films,

G. Carotenuto<sup>1</sup>, B. Martorana<sup>2</sup>, P. Perlo<sup>2</sup>, and L. Nicolais<sup>1</sup>, (<sup>1</sup>Inst. of Composite and Biomedical Materials. National Research Council. Napoli – 80125. Italy, <sup>2</sup>FIAT Research Center. Orbassano (TO) – 10043. Italy)

## TU-P28 Computational Estimation of Nano-Photocatalyst Activity: Feasibility of Kernel Based Learning Machines,

D.J. Strauss, G. Schäfer, M. Akarsu, and H. Schmidt, (Leibniz-Institute for New Materials, Saarbruecken, Germany)

## TU-P29 On Shape Controlled Nanocrystals and Hybrid Materials: How Nanotransistors and Remote Controlled Fluorescent Probes Could Be Realized,

S. Kudera<sup>1</sup>, L. Manna<sup>2</sup>, W.J. Parak<sup>1</sup>, (<sup>1</sup>Lehrstuhl für angewandte Physik, Ludwig-Maximilians Universität München <sup>2</sup>National Nanotechnology Lab of INFM Lecce, Italy)

## TU-P30 Catalytic Syntheses of Silicon Nanowires and Silica

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## Nanotubes,

Y.-H. Yang, S.-J. Wu, H.-S. Chiu, P.-I. Lin, and Y.-T. Chen, *(Dept. of Chemistry, National Taiwan University, Taipei 106, Taiwan, ROC and Institute of Atomic and Molecular Sciences, Academia Sinica, P.O. Box 23-166, Taipei 106, Taiwan, ROC)*

## TU-P31 Improvement in Writing Speed of Electron Beam Direct-Write Lithography,

C.Y. Chen, C.C. Su, J.Y. Huang, J.J. Yang, and H.Y. Lin, *(Micro Component Development Dept., Micro Electro-Mechanical Sys. Div., Mechanical Industry Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu, 310, Taiwan, ROC)*

## TU-P32 Preparation of Nano-Composites by Advanced Colloidal Processing,

H. Sarraf, *(Institute of Chemical Technology (I.C.T), Prague, Czech Republic)*

## TU-P33 Fabrication of Nanoelectrodes for Hybrid Molecular - Electronic Devices,

A.D. Torre, P. Visconti, G. Maruccio, E. D'Amone, R. Krahne, L. Manna, R. Rinaldi, and R. Cingolani, *(National Nanotechnology Laboratory of INFM, University of Lecce, Via per Arnesano, 73100 Lecce, Italy)*

## TU-P34 Self Assembly of Nanowires Array with Lattice Directional Growth,

H. Lin, *(Dept. of Applied Physics, Cornell University, Ithaca, NY, 14850, USA)*

## TU-P35 A Hybrid Nanorobotic Manipulation System Integrated with

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Nanorobotic Manipulators Inside Scanning and Transmission  
Electron Microscopes,

M. Nakajima, F. Arai, L. Dong, and T. Fukuda, *(Nagoya University, Nagoya City,  
464-8603, Japan)*

TU-P36 Automated Nano-Assembly of Nanoscale Structures,

H. Chen, N. Xi, G. Li, J. Zhang, A. Saeed, *(Electrical and Computer Engineering  
Dept., Michigan State University, East Lansing, MI 48823, USA)*

TU-P37 Atomic Force Microscope Based Nanomanipulator for  
Mechanical and Optical Lithography,

F.J. Rubio-Sierra, S. Burghardt, A. Kempe, W.M. Heckl, and R.W.  
Stark, *(Center for Nanoscience and Ludwig-Maximilians-Universität München, 80333 Munich, Germany)*

TU-P38 Magnetic Anisotropy in Magnetostatically Coupled  $\text{Ni}_{80}\text{Fe}_{20}$   
Nanowires,

S. Goolaup, N. Singh, A.O. Adeyeye, V. Ng, and M.B.A Jalil, *(Information  
Storage Materials Laboratory, Dept. of Electrical and Computer Engineering, National University of  
Singapore, 4 Engineering Drive 3, Singapore-117576)*

TU-P39 Three-Dimensional Calculation of Electronic Structures in  
Semiconductor Quantum Ring Based Artificial Molecules,

Y. Li, *(Dept. of Computational Nanoelectronics, National Nano Device Laboratories & Microelectronics and  
Information Systems Research Center, National Chiao Tung University, P.O. BOX 25-178, Hsinchu City,  
Hsinchu 300, Taiwan)*

TU-P40 Control of Drug-Carrying Magnetobeads by Magnetic

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## Gradient-Fields,

T. Weyh, N. Seidl, B. Gleich, C. Alexiou, M. Koch, B. Wolf, *(Heinz-Nixdorf-Chair For Medical Electronics, Dept. of Electrical Engineering and Information, Technology, Technische Universität München, Munich, Theresienstr. 90, 80333, Germany)*

## TU-P41 Dynamic Marker,

M. Koch, T. Weyh, and B. Wolf, *(Technische Universität München, Arcisstrasse 21, D-80290 München, Germany)*

## TU-P42 20nm Silicon Nanorods Fabricated by Reactive Ion Etch,

E.-Z. Liang, C.-J. Huang, and C.-F. Lin<sup>\*</sup>, *(Graduate Institute of Electro-optical Engineering, National Taiwan University, , \* Also with Dept. of Electrical Engineering and Graduate Institute of Electronics Engineering, Taipei, Taiwan, Republic of China)*

## TU-P43 Inversion Asymmetry Effects in L-Valley Quantum Wells,

J.-M. Jancu<sup>1</sup>, R. Scholz<sup>2</sup>, G. C. La Rocca<sup>1</sup>, E. A. de Andrada e Silva<sup>3</sup>, and P. Voisin<sup>4</sup>, *(<sup>1</sup>Scuola Normale Superiore and INFM, Piazza dei Cavalieri 7, I-56126 Pisa, Italy, <sup>2</sup>Institut für Physik, Technische Universität, D-09107 Chemnitz, Germany, <sup>3</sup>Instituto Nacional de Pesquisas Espaciais, C.P. 515, 12201-970 São José dos Campos - SP, Brasil, <sup>4</sup>Laboratoire de Photonique et de Nanostructure, CNRS, route de Nozay, F91000, Marcoussis, France)*

## TU-P44 Quantized Conductance in an In-Plane Gated In<sub>0.53</sub>Ga<sub>0.47</sub>As Quantum Point Contact,

A. Beyer and D.K. Ferry, *(Center for Solid State Electronics Research and Dept. of Electrical Engineering, Arizona State University, Tempe, Arizona, 85287-6206, U.S.A.)*

## TU-P45 Scattering of Chiral Currents by Quantum Point Contacts,

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A. Cresti<sup>1</sup>, G. Grosso<sup>1</sup> and G.P. Parravicini<sup>2</sup>, (<sup>1</sup>NEST-INFM and Dipartimento di Fisica  
"E. Fermi", Università di Pisa, Via Buonarroti 2, I-56127 Pisa, Italy, <sup>2</sup>NEST-INFM and Dipartimento di Fisica  
"A. Volta", Università di Pavia, Via Bassi 6, I-27100 Pavia, Italy)

TU-P46 Electrical Contacts of Metals to Carbon-Nanotubes for  
Applications, to Electrical Coupling Between Miniaturized Moving  
Parts and Sensors,

Y. Tzeng, Y. Chen, C. Liu, and V. Krishnardula, (Dept. of Electrical and Computer  
Engineering, Auburn University, Auburn, Alabama 36849, USA)

TU-P47 Lattice of Surface-Magic-Clusters: An Ordered Array of  
Identical Nanostructures,

H.H. Chang<sup>1,2</sup>, M.Y. Lai<sup>1</sup>, J.H. Wei<sup>2</sup>, C.M. Wei<sup>3</sup>, and Y.L. Wang<sup>1,2</sup>,  
(<sup>1</sup>Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei 106, Taiwan, <sup>2</sup>Dept. of Physics,  
National Taiwan University, Taipei 106, Taiwan, <sup>3</sup>Institute of Physics, Academia Sinica, Taipei 115, Taiwan)

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## POSTER SESSION II (Wednesday, Aug. 18<sup>th</sup>)

### WE-P1 Temperature Dependence of Electron Transport Through Long Organic Molecules,

A.Yu. Smirnov<sup>1</sup>, L.G. Mourokh<sup>2</sup>, and N.J.M. Horing<sup>2</sup>, (<sup>1</sup>*D-Wave System, Inc., 320-1985 W. Broadway, Vancouver, British Columbia, Canada V6J 4Y3*, <sup>2</sup>*Dept. of Physics and Engineering Physics, Stevens Institute of Technology, Hoboken, New Jersey 07030, USA*)

### WE-P2 Resonant Electron Tunneling Through Azurin in Air and Liquid by Scanning Tunneling Microscopy,

V. Frascerra, F. Calabi, G. Maruccio, P.P. Pompa, R. Cingolani, R. Rinaldi, (*National Nanotechnology Laboratory of INFM, University of Lecce, Via per Arnesano, 73100 Lecce, Italy*)

### WE-P3 A Two-Level Redundancy Scheme for Enhancing Scalability of Molecular-Based Crossbar Memories,

Y.-H. Choi<sup>1</sup>, M.-H. Lee<sup>1</sup>, and Y. K. Kim<sup>2</sup>, (<sup>1</sup>*Dept. of Computer Engineering*, <sup>2</sup>*Dept. of Chemical Engineering, Hongik University, Seoul, Korea*)

### WE-P4 STM Assisted *In-Situ* Spectroscopy on Nano-Sized Crystallites of Organic Semiconductors,

K. Hänel, L. Ruppel, G. Witte, A. Birkner, and C. Wöll, (*Physikalische Chemie I, Ruhr-Universität Bochum, 44780 Bochum, Germany*)

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### WE-P5 Electron-Phonon Scattering in Molecular Wires,

A. Pecchia<sup>1</sup>, A. Gagliardi<sup>2</sup>, A. Di Carlo<sup>1</sup>, T. Frauenheim<sup>2</sup>, P. Lugli<sup>1,3</sup>,

*(<sup>1</sup>Dipartimento di Ingegneria Elettronica, Università di Roma "Tor Vergata", 00133 Roma, Italy, <sup>2</sup>Dept. of theoretical physics, University of Paderborn, D-33098 Paderborn, Germany, <sup>3</sup>Institute of nanoelectronics, University of Munich, TU-Munich, Germany)*

### WE-P6 Device for Conductance Measurements of Molecular Systems,

M. Lambacher<sup>1</sup>, C.J.-F. Dupraz<sup>1</sup>, U. Beierlein<sup>1</sup>, J.P. Kotthaus<sup>1</sup>, U.S. Schubert<sup>2</sup>, P.R. Andres<sup>2</sup>,

*(<sup>1</sup>Center for NanoScience and Sektion Physik, Ludwig-Maximilians-Universität-München, Geschwister-Scholl-Platz 1, 80539 München, Germany, <sup>2</sup>Laboratory of Macromolecular Chemistry and Nanoscience, Eindhoven University of Technology and Dutch Polymer Institute, P. O. Box 513, 5600 MB Eindhoven, The Netherlands)*

### WE-P7 Practical Aspects of Electron Transport Through Single Molecules,

J.M. Seminario, *(Dept. of Electrical Engineering, University of South Carolina, Columbia, South Carolina 29208, USA)*

### WE-P8 Effects of Synthesis Conditions on the Growth of MWCNTs Using an Ultra Sonic Evaporator with Pyrolysis of Hydrocarbon,

N.J. Jeong, K.S. Song, S.J. Lee, I.S. Ryu, S.P. Yu and Y.S. Seo, *(Korea Institute of Energy Research, 71-2, Jang-Dong, Yuseong-gu, Daejeon, 305-343, Korea)*

### WE-P9 Functionalization and Dispersion in a Polymer-Matrix of Single-Wall Carbon Nanotubes: a FT-IR Study,

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A. Curulli<sup>1</sup>, F. Valentini<sup>2</sup>, S. Orlanducci<sup>2</sup>, E. Tamburri<sup>2</sup>, M. L. Terranova<sup>2</sup>, S. Nunziante Cesaro<sup>1</sup>, and G. Palleschi<sup>2</sup>, (<sup>1</sup>ISMN CNR Division 2, Rome, Italy, via del Castro Laurenziano 7, 00161 Rome, Italy, <sup>2</sup>Dept. of Chemistry, Tor Vergata University, via della Ricerca Scientifica 1, 00133 Rome, Italy)

## WE-P10 Carbon Nanotubes Analysis, Classification and Characterization,

M.A. Lyshevski, (Microsystems and Nanotechnologies, Webster, NY, 14580, USA)

## WE-P11 Carbon Nanotube/Conducting Polymer Composites for Electronic Application: Materials Preparation and Devices Assembling,

F. Brunetti<sup>1</sup>, E. Tamburri<sup>2</sup>, A. Reale<sup>1</sup>, A. Di Carlo<sup>1</sup>, P. Lugli<sup>3</sup>, S. Orlanducci<sup>2</sup>, M.L. Terranova<sup>2</sup>, A. Fiori<sup>2</sup>, (<sup>1</sup>Dept. of Electronic Engineering, Univ. Rome Tor Vergata, Rome, 00133 Italy, <sup>2</sup>Dept. of Science and Chemical Technology, Univ. of Rome Tor Vergata, Rome, 00133 Italy and INFM, <sup>3</sup>Lehrstuhl für Nanoelektronik, TU München Arcisstrasse 21 D-80333 München, Germany)

## WE-P12 Controlled Growth of Ordered SWCNTs for the Realization of Multielectrode Field Emitter Devices,

F. Brunetti<sup>1</sup>, P. Regoliosi<sup>1</sup>, A. Reale<sup>1</sup>, A. Di Carlo<sup>1</sup>, M.L. Terranova<sup>2</sup>, S. Orlanducci<sup>2</sup>, A. Fiori<sup>2</sup>, E. Tamburri<sup>2</sup>, V. Sessa<sup>2</sup>, A. Ciorba<sup>3</sup>, M. Rossi<sup>3</sup>, M. Cirillo<sup>4</sup>, V. Merlo<sup>4</sup>, (<sup>1</sup>Dept. of Electronic Engineering, Univ. Rome Tor Vergata, Rome, 00133 Italy, <sup>2</sup>Dept. of Science and Chemical Technology, Univ. of Rome Tor Vergata, Rome, 00133 Italy and INFM, <sup>3</sup>Dept. of Energetics, Univ. of Rome La Sapienza, Rome, 00100 Italy, <sup>4</sup>Dept. of Physics, Univ. of Rome Tor Vergata, Rome, 00133 Italy and INFM)

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## WE-P13 Atomistic Study of the Role of Contact Properties on Nanotube Conduction,

D. Kienle and A. Ghosh *(School of Electrical and Computer Engineering, Purdue University, W. Lafayette, IN 47907, USA)*

## WE-P14 Controlled Growth of Carbon Nanotubes on Microstructured Surfaces,

Y. Keles<sup>1,2</sup>, M. Milas<sup>2</sup>, V. Thommen<sup>3</sup>, S. Fahlbusch<sup>4</sup>, T. Stöckli<sup>1</sup>, E. Meyer<sup>3</sup>, L. Forró<sup>2</sup>, H.F. Knapp<sup>1</sup>, *(<sup>1</sup>CSEM Centre Suisse d'Electronique et de Microtechnique SA, Alpnach Dorf, CH-6055, Switzerland, <sup>2</sup>Institute of Physics of Complex Matter, FSB-EPFL, Lausanne, CH-1015, Switzerland, <sup>3</sup>Institut für Physik der Universität Basel, Basel, CH-4056, Switzerland, <sup>4</sup>Materials Technology Dept., EMPA, Thun, CH-3602, Switzerland)*

## WE-P15 Individual Single-Walled Carbon Nanotubes with Vertical Alignment,

T. Kato<sup>1</sup>, G.-H. Jeong<sup>1</sup>, T. Hirata<sup>1</sup>, R. Hatakeyama<sup>1</sup>, and K. Tohji<sup>2</sup>, *(<sup>1</sup>Graduate School of Engineering, Tohoku University, Sendai 980-8579, Japan, <sup>2</sup>Graduate School of Environmental Studies, Tohoku University, Sendai 980-8579, Japan)*

## WE-P16 Electric Transport Properties of Single-Walled Carbon Nanotubes Functionalized by Plasma Ion Irradiation Method,

G.-H. Jeong<sup>1</sup>, T. Izumida<sup>1</sup>, T. Hirata<sup>1</sup>, R. Hatakeyama<sup>1</sup>, Y. Neo<sup>2</sup>, H. Mimura<sup>2</sup>, K. Omote<sup>3</sup>, Y. Kasama<sup>3</sup>, S.-H. Jhang<sup>4</sup>, and Y.-W. Park<sup>4</sup>, *(<sup>1</sup>Dept. of Electronic Engineering, Tohoku University, Sendai 980-8579, Japan, <sup>2</sup>Research Institute of Electronics, Shizuoka University, Hamamatsu 432-8011, Japan, <sup>3</sup>Ideal Star Corporation, Minami-Yoshinari 6-6-3, Aoba-ku, Sendai 989-3204, Japan, <sup>4</sup>School of Physics, Seoul National University, Seoul 151-747, Korea)*

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WE-P17 Multi-Physics Analysis for Assembling of Nano Particle  
Under the Mixture Condition of the Dielectric Fluid and AC Electric  
Field,

S.-K. Kwon<sup>1</sup>, S.-H. Kim<sup>1</sup>, Y.-E. Yoo<sup>2</sup>, E.-S. Lee<sup>2</sup>, C.-S. Han<sup>2</sup>, (<sup>1</sup>KAIST, 373-1 Guseong, Yousung, Daejeon, 305-7-1, Rep. of Korea, <sup>2</sup>KIMM, 171 Jang, Yousung, Daejeon, 305-343, Rep. of Korea)

WE-P18 Assembly of Carbon Nanotubes onto Arrays of  
Microfabricated Test Patterns for the Design of Nanoelectronic  
Devices,

M. Dipasquale<sup>1</sup>, F. Gatti<sup>2</sup>, D. Ricci<sup>1</sup>, D. Caviglia<sup>1</sup> and E. Di Zitti<sup>1</sup>,  
(<sup>1</sup>Dept. of Biophysical and Electronic Engineering, <sup>2</sup>Dept. of Physics, University of Genoa, Genoa, 16145, Italy)

WE-P19 Ultrathin Capsules: Novel Artificial Cellular Carriers,

A.J. Khopade\*, F. Caruso, and H. Möhwald, (Max Planck Institute of Colloids and Interfaces, D-14424 Potsdam, Germany, \* Sun Pharma Advanced Research Centre, Tandalja, Baroda -390 020 GJ, India)

WE-P20 Robust Entropy-Enhanced Frequency-Domain Genomic  
Analysis Under Uncertainties,

S.E. Lyshevski and F.A. Krueger, (Dept. of Electrical Engineering, Rochester Institute of Technology, Rochester, NY 14623-5603, USA)

WE-P21 Quantum Theory and High-Fidelity Mathematical Models of  
DNA,

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M.A. Lyshevski, *(Microsystems and Nanotechnologies, 70 Angels Path, Webster, NY 14580-4400, USA)*

WE-P22 Atomic Force Microscopy in Ophthalmic Surgery,  
M.P. De Santo<sup>1</sup>, M. Lombardo<sup>2</sup>, S. Serrao<sup>2</sup>, G. Lombardo<sup>1</sup>, and R. Barberi<sup>1</sup>, *(<sup>1</sup>LICRYL – Dept. of Physics, Università della Calabria, Arcavacata di Rende, 87036, <sup>2</sup>Dept. of Ophthalmology, Catholic University of Rome, Rome, Italy)*

WE-P23 Probing Lipid Membranes and Ion Channels with High Frequency Spectroscopy,

M. Olapinski<sup>1</sup>, A. Brüggemann<sup>2</sup>, M. George<sup>2</sup>, S. Manus<sup>1</sup>, N. Fertig<sup>2</sup>, and F.C. Simmel<sup>1</sup>, *(<sup>1</sup>Sektion Physik and Center for Nanoscience, University of Munich, Geschwister-Scholl-Platz 1, 80539 München, Germany, <sup>2</sup>Nanon Technologies GmbH, Pettenkoferstr. 12, 80336 München, Germany)*

WE-P24 DNA-Mediated Assembly of Gold Nanoparticles Influenced by Cations,

U. Rehn<sup>1</sup>, R.B. Wehrspohn<sup>2</sup> and U. Gösele<sup>1</sup>, *(<sup>1</sup>Max Planck Institute of Microstructure Physics, 06120 Halle, Germany, <sup>2</sup>University of Paderborn, Dept. of Physics, 33098 Paderborn, Germany)*

WE-P25 Drug delivery for nerve tissue regeneration,  
F. C. Soumetz<sup>1</sup>, M. Giacomini<sup>1</sup>, L. Pastorino<sup>1</sup>, J. B. Phillips<sup>2</sup>, R. A. Brown<sup>2</sup>, C. Ruggiero<sup>1</sup>, *(<sup>1</sup>D.I.S.T, University of Genova, Via Opera Pia, 13, 16145 Genova, Italy, <sup>2</sup>University College London, Tissue Repair and Engineering Centre, United Kingdom)*

WE-P26 Yeast Cytochrome C on Gold Electrode: A Robust Hybrid

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### System for Bio-Nanodevices,

B. Bonanni, D. Alliata, L.Andolfi, A.R. Bizzarri, I. Delfino, S.

Cannistraro, *(Biophysics and Nanoscience Centre, INFM, Dipartimento di Scienze Ambientali, Università della Tuscia, Largo dell'Università, I-01100, Viterbo, Italy)*

### WE-P27 Nanotechnology and Medicine,

S. Thalhammer and W.M. Heckl, *(Dept. for Geo- and Environmental Sciences, University of Munich, Theresienstr. 41, 80333 Munich, Germany)*

### WE-P28 Experimental Study of Tunnelling Through Nanogap Electrodes in Neural Network,

A.K. Ray<sup>1</sup>, A. Bandyopadhyay<sup>1</sup> and S.I. Khondaker<sup>2</sup>, *(<sup>1</sup>Nanotechnology Research Laboratories, School of Engineering, Sheffield Hallam University, City Campus, Pond Street, Sheffield S1, 1WB, UK, <sup>2</sup>Center for Nano- & Molecular Science and Technology, The University of Texas at Austin, 1 University Station, A5300, Austin, TX 78712, USA)*

### WE-P29 Quantum Systems Versus Classical Networks,

P.P. Civalleri and M. Gilli, *(Politecnico di Torino, Corso Duca degli Abruzzi, 24, I-10129 Torino,)*

### WE-P30 A Fault-Tolerant Architecture for Nanoelectronic Signal Processing,

H. Fujisaka, D.Hamano, T. Kamio, and M. Sakamoto, *(Faculty of Information Sciences, Hiroshima City University, 3-4-1 Ozuka-higashi, Asa-minami-ku, Hiroshima, 731-3194 Japan)*

### WE-P31 Multiplexing Schemes for Cost-Effective Fault-Tolerance,

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S. Roy and V. Beiu, *(School of EE&CS, Washington State University, Pullman, WA 99164-2752, USA)*

WE-P32 Useful Logic Blocks Based on Clocked Series-Connected  
RTDs,

H. Pettenghi, Maria J. Avedillo and J.M. Quintana, *(Instituto de Microelectrónica de Sevilla, Centro Nacional de Microelectrónica, Edificio CICA, Avda. Reina Mercedes s/n, 41012-Sevilla, Spain)*

WE-P33 Quantum Boolean Circuits Construction Using Tabulation  
Method,

C.-Y. Lu, S.-A.Wang, and S.-Y. Kuo, *(Dept. of Electrical Engineering and Graduate Institute of Electronic Engineering, National Taiwan University, Taipei, Taiwan)*

WE-P34 Reliability Evaluation of von Neumann Multiplexing Based  
Defect-Tolerant Majority Circuits.

D. Bhaduri and S.K. Shukla, *(Fermat Lab, Bradley Dept. of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA)*

WE-P35 Reliability Analysis for Defect-Tolerant Nano-Architectures  
in the Presence of Interconnect Noise,

D. Bhaduri and S.K. Shukla, *(Fermat Lab Bradley Dept. of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA)*

WE-P36 Effective Electrostatic Discharge Protection Circuit Design  
Using Novel Full-Silicided N-MOSFETs in Sub-100 nm Era,

J.W. Lee<sup>1</sup>, Y. Li<sup>1,2</sup>, and H. Tang<sup>3</sup>, *(<sup>1</sup>Dept. of Computational Nanoelectronics, National*

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### WE-P37 Modeling and Analysis of Carbon Nanotube Interconnects and Their Effectiveness in High Speed VLSI Design,

A. Raychowdhury, and K. Roy, *(Dept. of Electrical and Computer Engineering, Purdue University, USA)*

### WE-P38 An Efficient Functional Verification Method for Quantum Boolean Circuits,

S.-A. Wang, C.-Y. Lu, and S.-Y. Kuo, *(Dept. of Electrical Engineering and Graduate Institute of Electronic Engineering, National Taiwan University, Taipei, Taiwan)*

### WE-P39 Design of Multi-Valued QMOS Pre-Decoder,

H. Zhang<sup>1</sup>, T. Uemura<sup>1</sup>, P. Mazumder<sup>1</sup>, and K. Yang<sup>2</sup>, *(<sup>1</sup> The University of Michigan, Ann Arbor, MI, 48105, USA, <sup>2</sup>KAIST, Republic of Korea)*

### WE-P40 Design and Analysis of SET Circuits: Using MATLAB Modules and SIMON,

M. Sulieman and V. Beiu, *(School of Electrical Engineering and Computer Science, Washington State University, Pullman, WA 99164-2752, USA)*

### WE-P41 Using Quantum Model of Computation for Reliability Evaluation of Defect Tolerant Nano-Architectures,

D. Bhaduri and S.K. Shukla, *(Fermat Lab, Bradley Dept. of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA)*

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WE-P42 Complex Majority Gate Implementations of Quantum Dot Cellular Automata,

W.J. Townsend and J.A. Abraham, *(Computer Engineering Research Center, The University of Texas at Austin, Austin, TX 78712, USA)*

WE-P43 On Nanoelectronic Architectural Challenges and Solutions,

V. Beiu<sup>1</sup>, U. Rückert<sup>2</sup>, S. Roy<sup>1</sup>, and J. Nyathi<sup>1</sup>, *(Centres for Neural-Inspired Nano Architectures, <sup>1</sup>School of EE&CS, Washington State University, Pullman, WA 99164-2752, USA, <sup>2</sup>Heinz-Nixdorf Institute, University of Paderborn, 33102 Paderborn, Germany)*

WE-P44 Performance of Organic Photodetectors with Bulk Heterojunctions,

T. Rauch, D. Henseler, P. Schilinsky, C. Waldauf, J. Hauch, C.J. Brabec *(Siemens AG, Erlangen, Germany)*

WE-P45 Nanomagnetism and Domain Structure of Sintered Nickel-Zinc Ferrites Studied by Magnetic Force Microscopy,

A. Dias *(Departamento de Engenharia Metalúrgica e de Materiais Universidade Federal de Minas Gerais, Belo Horizonte-MG, Brazil)*

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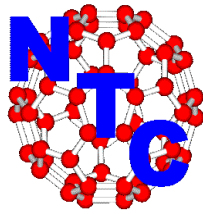
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Die DFG dient der Wissenschaft in allen ihren Zweigen durch die finanzielle Unterstützung von Forschungsvorhaben und durch die Förderung der Zusammenarbeit unter den Forschern.

### Aktuelles

#### Empfehlungen für Medizinische Fakultäten

(30.07.04) Neben einer guten Grundausstattung ist vor allem die Mittelverteilung eine wesentliche Voraussetzung für Medizinischen Fakultäten, um international wettbewerbsfähig zu sein. Die DFG hat nun Empfehlungen zur leistungsorientierten Mittelvergabe (LOM) ausgesprochen.

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#### Erstmals EURYI Award für Nachwuchswissenschaftler vergeben

(29.07.04) Die europäischen Forschungsorganisationen haben erstmals 25 Nachwuchswissenschaftler mit dem European Young Investigator Award (EURYI) ausgezeichnet. Der mit bis zu 1,25 Millionen Euro dotierte Preis soll deren Karriereweg unterstützen und zugleich die Attraktivität des europäischen Forschungsraums erhöhen.

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#### DFG zum Urteil des Bundesverfassungsgerichts

(27.07.04) Mit dem heutigen Urteil zur Juniorprofessur entsteht für den wissenschaftlichen Nachwuchs ein hohes Maß an Unsicherheit. Die Juniorprofessur war der bislang konsequenteste Versuch, die frühe Selbstständigkeit des

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wissenschaftlichen Nachwuchses an den Hochschulen durchzusetzen. Ohne geeignete Alternativen werden gerade die besten Wissenschaftlerinnen und Wissenschaftler abgeschreckt, ihre Karriere in Deutschland fortzusetzen. Die DFG appelliert an die Länder, möglichst bald die notwendigen Rahmenbedingungen zu schaffen, um für diese Personengruppe attraktive Karrieremöglichkeiten in Deutschland auch weiterhin zu sichern.

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## Jahrestreffen von Emmy Noether-Stipendiaten

(16.07.04) Zum dritten Mal veranstaltet die DFG ein Jahrestreffen für die Geförderten im Emmy Noether-Programm, ihrem Exzellenzprogramm für Nachwuchsgruppen. Vom 30. Juli bis 1. August treffen sich die Nachwuchswissenschaftler in Potsdam zum Erfahrungsaustausch. Im Rahmen eines wissenschaftspolitischen Abends wird Professor Julian Nida-Rümelin vortragen und für eine Diskussion zur Verfügung stehen.

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